A New Transport Vision for the Sussex Coast

New Transport Strategy Report

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In association with:

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Notice

[1] https://scate.org.uk/

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Table of Acronyms and Abbreviations

AAWT	Average Annual Weekday Total
AQMA	Air Quality Management Areas
ATC	Automatic Traffic Counts
C2CLEP	Coast to Capital Local Enterprise Partnership
CfBT	Campaign for Better Transport
CPRE	Campaign for the Protection of Rural England
DfT	Department for Transport
EAST	[DfT's] Early Assessment and Sifting Tool
GBEB	Greater Brighton Economic Board
GBCWS	Greater Brighton and Coastal West Sussex
GDP	Gross Domestic Product
GVA	Gross Value Added
HA	Highways Agency
HE	Highways England
ICT	Information and Communication Technology
LEPs	Local Enterprise Partnerships
LEZ	Low Emission Zone
LSOA	Lower Super Output Area
LSTF	Local Sustainable Transport Fund
LTPs	Local Transport Plans
MSOAs	Middle Super Output Areas
MtCO2e	Million tonnes carbon dioxide equivalent
NCN	National Cycle Network

NPPF	National Planning Policy Framework
NPS	National Policy Statement
NR	Network Rail
NTS	New Transport Strategy
POPE	Post-Opening Project Evaluation
PTP	Personalised Travel Planning
RIS	[DfT's] Road Investment Strategy
SCATE	South Coast Alliance for Transport and the Environment
SDNP	South Downs National Park
SDNPA	South Downs National Park Authority
SELEP	South East Local Enterprise Partnership
SEPs	Strategic Economic Plans
SoCoMMS	South Coast Multi-Modal Study
SRN	Strategic Road Network
TOD	Transit-Oriented Development
UK-MAB	United Kingdom 'Man & the Biosphere' Committee
UNESCO	United Nations Educational, Scientific and Cultural Organisation
VfM	Value for Money
WASTM	Worthing and Adur Strategic Transport Model
WPL	Workplace Parking Levy
WSCC	West Sussex County Council
WTPs	Workplace Travel Plans

Executive Summary

There is a long history of studies, strategies and schemes to try and address the issue of congestion at various sections of the A27 corridor (through Sussex), dating back to the 1990s. Most recently, Highways England (HE) has been developing a set of schemes, predominantly focussed on highway capacity improvements, which are intended to address congestion and safety problems on the route, and support the growth of jobs and homes. This report challenges the focus on road building and presents a broad range of options which would deliver more progressive outcomes for local communities.

The A27 is a highly constrained corridor, restricted physically by the English Channel to the south and the South Downs National Park (SDNP) to the north, and serving several centres of employment, housing, retail and leisure. As such the corridor suffers from conflicts between longer distance strategic traffic, and more local demands for car based travel.

A recent review of the impact of road projects in England showed that building more road capacity often results in more traffic being generated (induced), and over time worsening congestion, either on the new road itself, or displaced to hotspots amongst local communities. Such traffic makes it harder for buses to run reliably, for people to walk and cycle for local trips, and generally increases accident levels and health risks associated with increasing pollution impacts dispersed over a wide area. It has also been found that the anticipated economic benefits of road schemes have not been demonstrated in most cases which have been examined retrospectively.

This is therefore a good to time to take stock and review the approach to transport provision on the A27 corridor. The review comes at a time when there is a lot of uncertainty about what transport will look like in the future. New technologies are changing the way we travel, and new mobility services look set to reduce the desire for car ownership. Young people are no longer striving to own and drive cars, and traffic levels have not changed significantly at a national level, or in West and East Sussex, since the turn of the millennium. There is therefore uncertainty about whether the assumptions built into traditional models of traffic forecasts remain accurate for a rapidly changing transport landscape.

This report therefore seeks to understand if the HE schemes are appropriate to help solve the problems of the A27 corridor. It also examines whether there is a viable, more progressive, transport strategy that will better meet the needs of local people and help create a healthier, wealthier, cleaner and fitter local environment for all. This approach seeks to influence behaviour and reduce the strategic/local conflicts, with the aim of meeting a much wider set of objectives, some of which are 'legally binding' (such as air quality), and some of which have enormous potential wider benefits (health).

The report identifies that many of the assumptions made in previous A27 studies do not fully reflect recommended practice in transport planning, the travel trends that have been seen since the turn of the millennium and current developments in transport technologies and services. They do not align with the economic plans and growth strategies for the region, and fail to meet the essential tests associated with building a sustainable future for the region.

A New Vision

This study looks at 'how the region can thrive and flourish in a way which embraces the uncertainty associated with future travel demand forecasts, and deliver a transport system which is more inclusive, sustainable and economically attractive'. The study findings suggest that there is a need to move away from 'predict and provide', and to embrace a more progressive approach based around 'vision and validate' which focusses on best practice and stakeholder views to create a healthier, wealthier, cleaner and more sustainable region. This will support SCATE's[2] strategic vision:

'The most desirable UK region, successfully responding to the diverse needs of residents, businesses and visitors alike, featuring high quality standards of living and people - centred solutions that help minimise energy use, promoting a thriving low carbon economy and the natural environment'

This approach is embedded in the core principles of successful and progressive cities and regions, and the report has identified several exemplar case studies that the region can learn from. A common element of these has been the ability to take forward a successful sustainable transport programme. This has resulted in smarter growth through an approach that is more compatible with achieving environmental and economic benefits and a better quality of life.

A New Transport Strategy (NTS)

As part of this study a workshop was held with a range of key stakeholders including representatives from statutory organisations (see chapter 6). There was strong agreement on the central role of transport in helping to drive forward economic growth if effectively planned and managed in conjunction with other factors such as skills and housing. Discussions at the workshop covered the main aspects to be considered in developing a desirable future, including possible objectives, opportunities and barriers, with stakeholders identifying what they agreed were the most important aspects of an alternative approach to transport.

[2] https://scate.org.uk/

A wide range of views, ideas and contributions informed the development of the NTS. The main components and interventions of the proposed NTS are shown below.

Components	Interventions
1. Encourage Use of Sustainable Transport	Intensive programme of smarter choices
	Integrated ticketing
2. Provision of Alternatives to Car	Implementation of high-quality cycle links
	Improvements to local bus services
	Rail enhancements
3. Integrated Development Planning	Transit Oriented Development
	Improved integration between land-use and transport planning
4. Demand Management	Development of a coordinated parking strategy
	Development of a specific workplace parking strategy
	Improvements in freight route management and information
	Local traffic management schemes
5. Support Highway Network Operation	Highway improvements at key sections on A27
	Speed management plan
	Multi-modal variable message signing
6. Promotion of Coordinated Strategies	Rail strategy across the sub-region
	Sub-regional design guide with emphasis on active travel and sustainable development
7. Marketing and Communications	Proactive media and communications strategy
	Opening up of transport data feeds
	Support for implementation of mobility as a service

The NTS builds upon local context and the best experiences from successful other places, and recognises that new homes and jobs need to be provided in locations that are served by enhanced public transport, and attractive walking and cycling connections. This balanced approach can help address the A27 problems in a way which supports sustainable economic growth, without the negative impact associated with extensive new road building. As such it should lead to a more sustainable and economically prosperous future for the region. The New

Transport Strategy should be considered as an alternative to the HE proposals, and should be further tested and discussed with all the relevant local stakeholders.

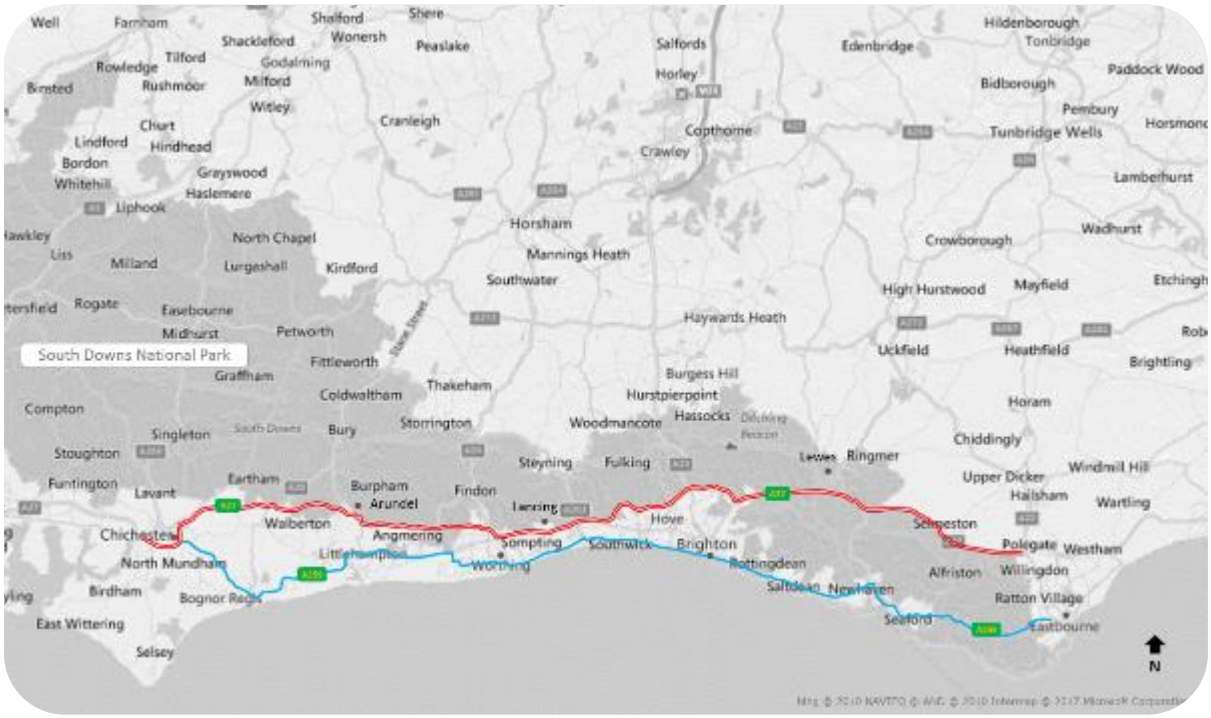
1. Introduction

Overview

1.1 Integrated Transport Planning Ltd, in conjunction with the University of the West of England (Bristol), was commissioned by Campaign for Better Transport (CfBT) acting on behalf of the South Coast Alliance for Transport and Environment (SCATE) to explore opportunities to promote an alternative transport vision for the A27 corridor along the Sussex Coast. The main objective of the complete study is to define a high-level strategy to help break the undesirable cycle of continual road expansion and the lack of transport choice (other than the car) that many communities are faced with.

1.2 Figure 1-1 shows a map of the two key east-west road corridors along the Sussex coast, namely, the A27 and A259 corridors, which are included within the study area and are shown in red and blue respectively.

Figure 1-1: Key East-West road corridors



Key — A27 — A259

1.3 Following a background review of the policy context, several study reports and relevant documentation detailing the history of development of various initiatives across towns

and the A27 corridor, this report sets out details of the current situation; up-to-date evidence; the overall views of stakeholders; and details of well-establish evidence base supporting the proposed new transport strategy.

1.4 With significant uncertainty around how technology might change the way transport is provided and used, and around traffic forecasting and the relationship between road-building and economic growth, now is the time to consider an alternative approach: one that can both improve traffic flow on the A27 and provide more sustainable transport options for many journeys within the corridor. The alternative vision presented in this report provides some initial thinking on what this approach might look like and is intended to stimulate discussion and debate about the best solutions for the residents, businesses and visitors who use the corridor.

1.5 It should be noted that ITP has not had the benefit of detailed information on travel patterns and our project team has had to rely on what is publicly available, primarily 2011 Census data. ITP has not carried out an independent verification of any documents, including policies, background papers and study reports, or the validity of the evidence contained therein has been made. This report is not intended to validate nor disprove any claims made by the documents used by our project team to set out the context of this study.

1.6 Opinions and information provided in this report are on the basis of the project team using due skill, care and diligence in the preparation of the same. Views are based on the ITP project team's understanding of individual interventions, and published reports of effectiveness of alternative approaches, and professional judgement of how effective different interventions might be in promoting the proposed vision.

1.7 To strengthen this report, the views of local stakeholders (i.e. members of the SCATE network) were considered. Emphasis was given to gaining a better understanding of the local needs to respond more effectively to the local context.

Purpose

1.8 The New Transport Strategy Report explores whether improvements to active travel and public transport, alongside appropriate planning decisions, could have sufficient impact to promote an alternative vision in the Sussex coast.

1.9 In this report, **Chapter 2** includes a summary of the policy context; **Chapter 3** provides an overview of transport studies across the sub-region, including proposals, improvements and key schemes; **Chapter 4** presents details of the baseline conditions, comprising car

ownership trends, age-distribution information, main methods of travel to work, public transport accessibility analysis, travel conditions, key employment and housing details and overall travel patterns; **Chapter 5** discusses the case and assumptions for the A27 highway improvements in the light of the deep uncertainty regarding future societal developments, up-to-date evidence of the impacts of road building and intelligent mobility with a view to framing the preferred approach for an alternative strategy; **Chapter 6** contains an overview of the stakeholder workshop; **Chapter 7** details interventions of the baseline strategy; **Chapter 8** provides details of the new transport strategy, including a summary of the problem to be solved, proposed vision and components of the strategy; **Chapter 9** discusses expected impacts of the new transport strategy in the context of the evidence base; and **Chapter 10** sets out our key findings and conclusions.

Study Area

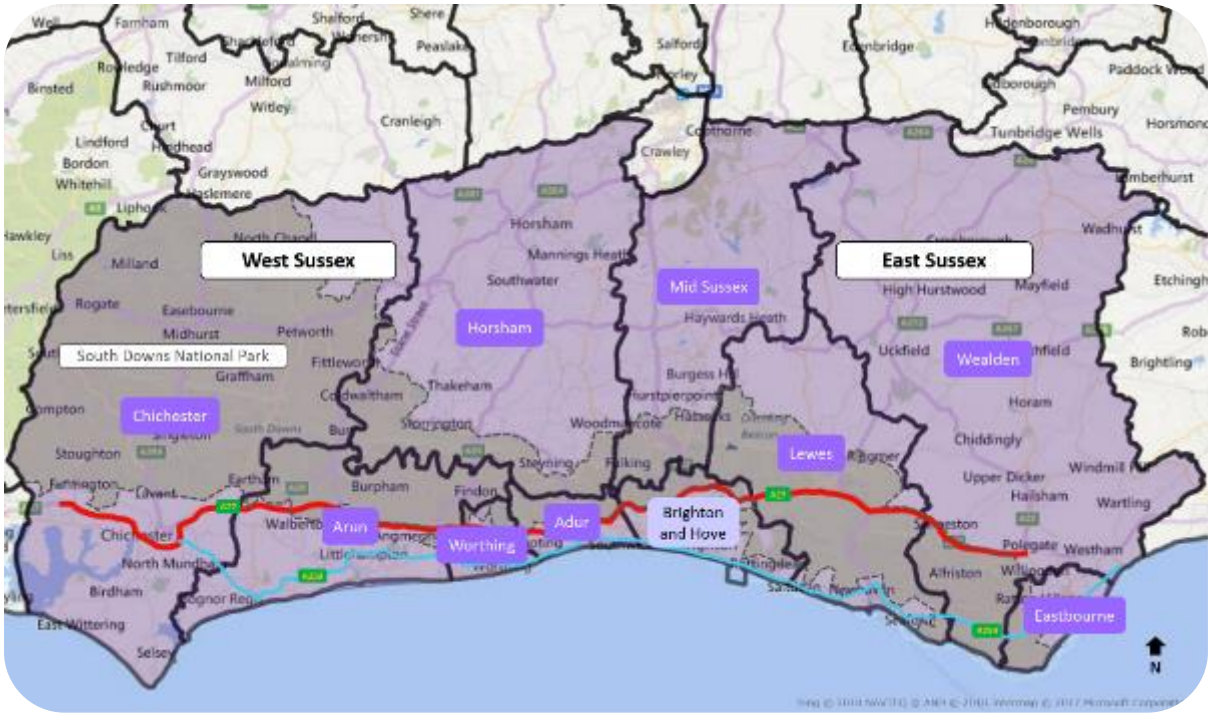
1.10 In line with SCATE's requirements, the spatial scope of this study involves the A27 corridor along the Sussex coast and its immediate hinterland from Chichester to the west and Eastbourne to the east.

1.11 The section of the east-west corridor under consideration connects two non-metropolitan counties (West Sussex and East Sussex) and a unitary authority (Brighton & Hove). In addition to these, the South Downs National Park Authority (SDNPA) and local authority districts, are expected to influence the corridor's operational performance as part of the study area, the latter of which comprise:

- Adur.
- Arun.
- Chichester.
- Eastbourne.
- Horsham.
- Lewes.
- Mid Sussex.
- Wealden.
- Worthing.

1.12 Figure 1-2 depicts the main local authorities that are considered within the study area.

Figure 1-2: Key local authorities



Key A27 A259 Local Authority Districts Unitary Authority South Downs National Park Authority

2. Policy Context

2.1 This section outlines the main aspects of the policy context critical to underpin the development of a sustainable transport strategy for the study area. This includes national, regional and local policy considerations.

The National Policy Statement for National Networks

2.2 As set out by the National Policy Statement (NPS), this policy provides guidance and requirements for the development of nationally significant infrastructure on the road and rail networks in England (Department for Transport, 2014).

2.3 The following four strategic objectives are defined to support the Government's vision for the national networks:

1) Providing capacity and connectivity to support national and local economic activity.
2) Supporting and improving journey quality, reliability and safety.
3) Joining our communities and linking effectively to each other.
4) Supporting delivery of environmental goals and the move to a low carbon economy.

2.4 To support national networks, Government has defined three potential policy responses or options to address networks' specific needs:

- Maintenance and asset management.
- Demand management.
- Modal shift.

2.5 The strategic objectives of the NPS are consistent with the National Planning Policy Framework (NPPF), which encompasses an explicit commitment to 'minimise social and environmental impacts and improve quality of life'. Moreover, the statement explains a direct role for the national network to play in helping active and sustainable travel.

National Planning Policy Framework

2.6 As stated by the Department for Communities and Local Government (2012) through the current NPPF, planning should:

1) be genuinely plan-led.
2) not simply be about scrutiny.
3) proactively drive and support sustainable economic development.
4) always seek to secure high quality design and a good standard.
5) take account of the different roles and character of different areas.
6) support the transition to a low carbon future in a changing climate.
7) contribute to conserving and enhancing the natural environment and reducing pollution.
8) encourage the effective use of land.
9) promote mixed use developments.
10) conserve heritage assets.
11) actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling.
12) take account of and support local strategies to improve health, social and cultural wellbeing for all.

2.7 These core planning principles are recognised to be of significance in the development of an alternative transport strategy within the study area.

2.8 As suggested by the NPPF, the promotion of transport systems, which are expected to respond to the needs of urban and rural communities, needs to be balanced in favour of sustainable transport modes. Notwithstanding possible challenges for the movement of goods and people particularly in the context of rural areas, development should be planned aiming to reduce the need for major transport infrastructure.

Road Investment Strategy for the 2015/16-2019/20 Road Period

2.9 This five-year national Road Investment Strategy (RIS) for the Strategic Road Network (SRN) seeks to invest over £15 billion to 2021. DfT's aspiration is set out for 25 years and seeks to revolutionise the country's strategic roads with a view to creating a modern network that supports a modern Britain, making a real difference to people's lives and businesses' prospects (Department for Transport, 2015a).

2.10 The National Government's strategic vision defined for this first road period is important in the context of this study, as interventions on the SRN need to demonstrate how individual schemes or combination of work packages are expected to make a positive

contribution to people's lives and businesses' opportunities. DfT's strategy outlines a number of key considerations that include the importance of:

- enhanced reliability and predictability for businesses.
- delivering safer, more stress-free journeys that everyday users need.
- promoting a SRN that is socially and environmentally sensitive, working harmoniously with its surroundings.

2.11 Similarly, the strategy states that to achieve the defined strategic vision, Government will ring-fence funding for actions beyond business as usual, including environmental; innovation; and cycling, safety and integration funds.

Bus Services Act 2017

2.12 The Bus Services Act completed its passage through Parliament and received Royal Assent in April 2017.

2.13 This Act consists of ten parts, setting out a simpler way to facilitate the provision of bus services and franchising models in which local transport authorities have the ability to define bus service standards within those areas the authorities are responsible for.

2.14 The Act features a broad range of measures and partnership possibilities, which are now available to local transport authorities across England (i.e. Combined authorities, county and unitary councils). Options include Advanced Quality Partnerships and a number of Enhanced Partnerships plans and schemes.

Rail Strategy

2.15 As part of Network Rail's long-term planning process, Network Rail (NR) set out in 2015 a strategic vision for the South East over a 30-year horizon.

2.16 NR's strategy is presented in the Sussex Route Study (2015) and this includes the East Coastway and West Coastway lines, which provide services centred on Brighton. Line speeds along these lines are noted to be generally below 75mph with a faster section east of Lewes and a few points/junctions where speeds drop below 35mph.

2.17 Coastway lines are recognised to offer poor journey times and be subject to considerable space challenges.

2.18 Long distance conditional outputs set out in the strategy seek to reduce 'generalised' journey times to central London from Brighton, Eastbourne, Worthing and Hove. NR intends to take advantage of line speed increases linked to the completion of the East Sussex re-signalling scheme and re-work stopping patterns. The delivery of specific improvements for West Coastway line is indicated to be particularly complex, as they might not be delivered without disadvantaging a number of stations.

2.19 Although there are also suggestions that the main line service frequency in the off-peak might be intensified, this action will need to be weighed up against potential increases in operating costs. Possible electrification upgrades (beyond 2024) for the East and West Coastway routes are also being considered.

Local Plans

2.20 The following sections provide an overview of the visions set out by individual local plans for all the local authorities considered within the study area. Appendix 1 presents additional information regarding the key objectives defined by local plans, housing needs, employment and the economy as well as population growth.

Adur District Council

2.21 Adur District Council vision is defined through a series of vision statements (Adur District Council, 2016). These statements indicate that by 2031 regeneration benefits will be safeguarded to enable residents to enjoy an improved quality of life and wellbeing.

2.22 Consideration is given to accessibility in terms of access to jobs, housing, local services, community infrastructure and environmental quality. Key areas for development, which include Lancing, Sompting, Shoreham-by-Sea, Southwick and Fishersgate, are advocated to feature high standards of design.

2.23 Although employment and retail areas in Worthing and Brighton are still recognised as important destinations to local residents, Adur's town and village centres will also have a major role. Explicit reference is made to the need to work in conjunction with Highways England (HE) and West Sussex County Council (WSCC) to address congestion issues resulting in fewer delays and contributing to more sustainable travel patterns. The Council's plan states the need to encourage more people to use public transport. Consideration is given to the mitigation of air pollution, particularly in Air Quality Management Areas (AQMA).

Arun District Council

2.24 Arun's vision envisages a safer, more inclusive, vibrant and attractive place to live, work and visit (Arun District Council, 2014). This entails that Arun's residents will be healthier and better educated, with reduced inequalities between the most and least affluent.

2.25 Supplementary visions are also provided for individual places within the District's boundaries, including the coastal towns of Bognor Regis and Littlehampton and various inland towns and villages.

Brighton and Hove City Council

2.26 The city is guided by a vision to 2030 (Brighton & Hove City Council, 2016) defined by:

- a strong and prosperous city able to provide sufficient jobs at all levels and new housing as part of a sustainable and resilient low carbon economy.
- a sustainable city which will have made further progress towards becoming a resource-efficient city that responds to climate change.
- an attractive city for residents and visitors alike. This entails a city that is rewarding, safe and healthier with a high quality built environment and protected and enhanced natural environments.
- healthy and balanced communities where no one should be disadvantaged from birth considering key aspects of society namely, housing, education, employment, healthcare and sense of safety.

Chichester District Council

2.27 The vision by 2029 (Chichester District Council, 2015) is for an area where people can:

- find jobs that match different skills and aspirations allowing for the creation and growth of businesses.
- follow a socially responsible and environmentally friendly way of life while allowing them to pursue healthy lifestyles.
- enjoy the city, towns, villages and other areas.
- have a quality of life that is enriched for a range of opportunities.
- afford good quality homes.
- live in sustainable neighbourhoods and feel a sense of community whilst feeling safe and secure.

- move around safely with other travel opportunities rather than car travel while taking advantage of new communication and information technologies.

2.28 Specific reference is made to areas designated as AQMA.

Eastbourne Borough Council

2.29 The core strategic vision for the borough as defined in its local plan (Eastbourne Borough Council, 2012) is that by 2027: 'Eastbourne will be a premier coastal and seaside destination within an enhanced green setting. To meet everyone's needs Eastbourne will be a safe, thriving, healthy and vibrant community with excellent housing, education and employment choices, actively responding to the effects of climate change'.

Horsham District Council

2.30 The vision states 'a dynamic district where people care and where individuals from all backgrounds can get involved in their communities and share the benefits of a district that enjoys a high quality of life' (Horsham District Council, 2015).

Lewes District Council

2.31 It is recognised that the environment is a key element of the district's vision hence the need to work closely alongside the SDNPA. The plan makes reference to traffic as a key cause of pollution within designated AQMA.

2.32 The district wide vision by 2030 (Lewes District Council, 2016) defines Lewes as a district that: (a) responds to the challenges of climate change to enable enhanced air quality levels and reduced risks associated to flood events; (b) reduces the need for out commuting by improving local employment opportunities; (c) addresses imbalances in the standard of living through the appropriate provision of sustainable transport options, access to health care and education; (d) delivers new housing and provides appropriate affordable housing.

Mid Sussex District Council

2.33 This District Council's vision (Mid Sussex District Council, 2016) describes a thriving and attractive district, making the district a desirable place to live, work and visit. This vision is supported by a number of strategic aims to maintain, and where possible, improve the social, economic and environmental well-being of Mid Sussex and the quality of life for all, now and in the future.

2.34 Specific concerns are expressed by the plan in relation to air quality and the role of road traffic emissions.

Wealden District Council

2.35 The vision by 2027 (Wealden District Council, 2013) is of a district that 'will have successfully accommodated growth to meet future needs whilst protecting and enhancing its essential rural character and high quality environment and promoting the countryside as a resource for recreation and tourism.' This broad vision is recognised to translate more specifically into: 'market towns [that] will have been regenerated providing opportunities for residents to access suitable housing, local jobs, services, facilities and recreational opportunities and a number of its villages and rural settlements [that] will have enhanced their sustainability through successful growth including provision of affordable housing.'

Worthing Borough Council

2.36 The vision for Worthing Borough is driven by the aspiration of: 'a town with a healthy and diverse population that contributes fully to its future economic growth and prosperity' (Worthing Borough Council, 2011).

2.37 It is recognised that development is expected to be at the centre of this vision to ensure Worthing plays a key role within the wider sub-region.

2.38 The town centre and seafront are envisaged to provide a mix of land uses while promoting sustainable growth through the regeneration and delivery of key sites outside the town centre. Development is expected to be of a high quality and continue to be guided by the principles of sustainability.

2.39 Other aspects of this vision comprise (a) the need to supply adequate housing, infrastructure and community facilities to help address social and economic disparities; (b) improvements of the town's natural, historical and built environment with due regard to the adverse impacts of climate change and (c) support to the economy and employment options through the development of a flexible mix of office and industrial units.

South Downs National Park Authority

2.40 The SDNPA has jurisdiction over planning within the area of the South Downs National Park (SDNP).

2.41 The SDNPA Local Plan is currently in development and is estimated for adoption in July 2018. Until formal adoption, the 'Development Plan' for the SDNP area consists of the Local Plans of the aforementioned local authority areas as well as those for Winchester and East Hampshire, which are within the National Park but fall beyond the study area.

2.42 The latest preferred options version of the SDNPA's Local Plan – published in September 2015 – presents the following vision:

> *'The iconic English lowland landscapes and heritage will have been conserved and greatly enhanced. These inspirational and distinctive places, where people live, work, farm and relax, are adapting well to the impacts of climate change and other pressures.'*
>
> *'People will understand, value, and look after the vital natural services that the National Park provides. Large areas of high-quality and well-managed habitat will form a network supporting wildlife throughout the landscape.'*
>
> *'Opportunities will exist for everyone to discover, enjoy, understand and value the National Park and its special qualities. The relationship between people and landscape will enhance their lives and inspire them to become actively involved in caring for it and using its resources more responsibly.'*
>
> *'Its special qualities will underpin the economic and social wellbeing of the communities in and around it, which will be more self-sustaining and empowered to shape their own future. Its villages and market towns will be thriving centres for residents, visitors and businesses and supporting the wider rural community.'*
>
> *'Successful farming, forestry, tourism and other business activities within the National Park will actively contribute to, and derive economic benefit from, its unique identity and special qualities.'*
>
> (South Downs National Park Authority, 2015)

2.43 As the SDNPA Local Plan is still in development, it is recognised that this vision might be subject to amendments.

Local Transport Plans

2.44 Three Local Transport Plans (LTPs) are relevant to the study area (West Sussex, East Sussex and Brighton & Hove). LTPs considered comprised:

- Local Transport Plan 2015 - LTP4 (Brighton & Hove City Council, 2015)
- Local Transport Plan 2011-2026 - LTP3 (East Sussex County Council, 2011)
- West Sussex Transport Plan 2011-2026 - LTP3 (West Sussex County Council, 2011)

Local transport plan objectives

2.45 Overall, these three transport plans demonstrate similar objectives. The main four objectives that all three authorities were found to pursue are:

- Regional economic growth.
- Tackle climate change.
- Improve safety, health and security.
- Improve accessibility and enhance social inclusion.

2.46 It is recognised that, in particular, the need to pursue regional economic growth and tackle climate change poses a unique challenge, which requires the implementation of a fully integrated and consistent approach. Whilst expected to be a complex process, it is consistent with National Government ambitions and driven by the UK's commitment to support the delivery of environmental goals and the move to a low carbon economy.

Other Policies and Plans

Subnational Policy and Perspectives

2.47 Assessment of subnational policy has focused primarily around a review of the recently submitted Strategic Economic Plans (SEPs) for two key Local Enterprise Partnerships (LEPs) namely, the Coast to Capital Local Enterprise Partnership (C2CLEP) Strategic Economic Plan and the South East Local Enterprise Partnership (SELEP) Strategic Economic Plan, which cover the majority of the A27 corridor within the study area.

2.48 The C2CLEP SEP covers the A27 to the west of the A23 and the SELEP SEP covers the A27 to east of the A23. Each SEP identifies a number of key objectives that the development of transport interventions are thought to help achieve.

South East LEP Strategic Economic Plan

2.49 The SELEP SEP states that 'businesses have identified the A27 as a barrier to growth' and 'upgrading the A27 between Eastbourne and Lewes to address this is vitally important to improving connectivity to the A23/M23, Gatwick Airport and London and supporting businesses and housing growth plans in the Eastbourne- South Wealden growth corridor.'

2.50 The partnership's plan (South East Local Enterprise Partnership, 2014) describes South East LEP's sea ports and their associated road and rail networks, as the UK's most important gateway to the rest of the world. The A27 is highlighted as an integral part to the connectivity that is not considered fit for purpose for carrying long distance strategic traffic due to lack of investment.

2.51 It should be borne in mind that consultation with the business community is not always part of a wider consultation and also, that the port operators' past responses to plans for expanding east – west road capacity (Halcrow et al, 2002) suggested that they were far more concerned about north-south links, including rail connections, and that local 'travel to work area' improvements to get their staff to work were also important.

The Coast to Capital LEP Strategic Economic Plan

2.52 Within the C2CLEP SEP further detail is provided in relation to the ambition of investment potential of 'The Coastal Corridor'. It states 'The Coastal Corridor is identified as having excellent development and regeneration opnportunities that could transform the area's economy and provide significant new jobs and homes. The largest of these are Shoreham Harbour and Enterprise Bognor Regis. Significant development opportunities exist in Worthing and Littlehampton.'

2.53 With reference to the A27 the C2CLEP SEP states that 'growth in the Coastal Corridor continues to be constrained by performance of the A27, which is the only major east-west road along the coast providing connections between a string of priority business locations in Brighton, Shoreham, Worthing, Littlehampton and Bognor Regis. The SEP states that 'without fail, every consultation with businesses has brought up investment in A27 improvements as a top priority for growth.'

2.54 It is recognised that this SEP is distinctly driven by the need to support the highest levels of economic performance from the region.

2.55 Additionally issues cited by the C2CLEP SEP include:

- Peak hour congestion at bottlenecks at Chichester, Arundel, Worthing and Lancing.
- Unreliable journey times caused by congestion, poor resilience and very slow recovery from any incident.
- Inadequate capacity acts as a constraint to growth.
- Conflicts between strategic and local traffic movements making end to end journeys unattractive.
- Severance where the route bisects employment and housing areas.
- Perceived and actual transport problems act as a deterrent to investment and creating issues for planning consents.

2.56 Broadly speaking, the main challenges in relation to transport performance are said to include:

- congestion problems along the A27 and A23;
- restrictions affecting travel in rural areas, where approximately 20% of the Coast to Capital population lives and 22% of businesses are based (Coast to Capital Local Enterprise Partnership, 2014) and where travel options can be limited; and
- key road infrastructure (i.e. A27 and A259) reported to be under severe pressure.

Greater Brighton Economic Board

2.57 The Greater Brighton Economic Board (GBEB) is a formal partnership of the key stakeholders in the Brighton 'City Region'. The Board is responsible to formulate economic policy and co-ordinate economic activity and investment across the City Region across a myriad of areas, including transport.

2.58 Organisations represented on the GBEB are as follows:

- Adur District Council.
- Brighton & Hove City Council.
- Lewes District Council.
- Mid Sussex District Council.
- Worthing Borough Council.

- South Downs National Park Authority.
- Adur & Worthing Business Partnership.
- Brighton & Hove Economic Partnership.
- Coastal West Sussex Partnership.
- Coast to Capital Local Enterprise Partnership.
- University of Brighton.
- University of Sussex.
- City College Brighton & Hove.
- Northbrook College.
- Plumpton College.
- Sussex Downs College.

2.59 The geographic scope of GBEB's influence covers the local authority areas of Adur, Brighton & Hove, Lewes, Mid Sussex and Worthing.

2.60 GBEB (Greater Brighton Economic Board, 2016) states that the Board is committed to 'improving transport infrastructure and developing effective transport networks, to reduce congestion and increase access to employment, learning and products and services whilst also improving air quality.'

2.61 The Board has invested in a variety of transport schemes including bike share and intelligent transport schemes in Brighton & Hove, as well as a sustainable transport package in Worthing.

'The Living Coast': Brighton and Lewes Downs UNESCO World Biosphere Region

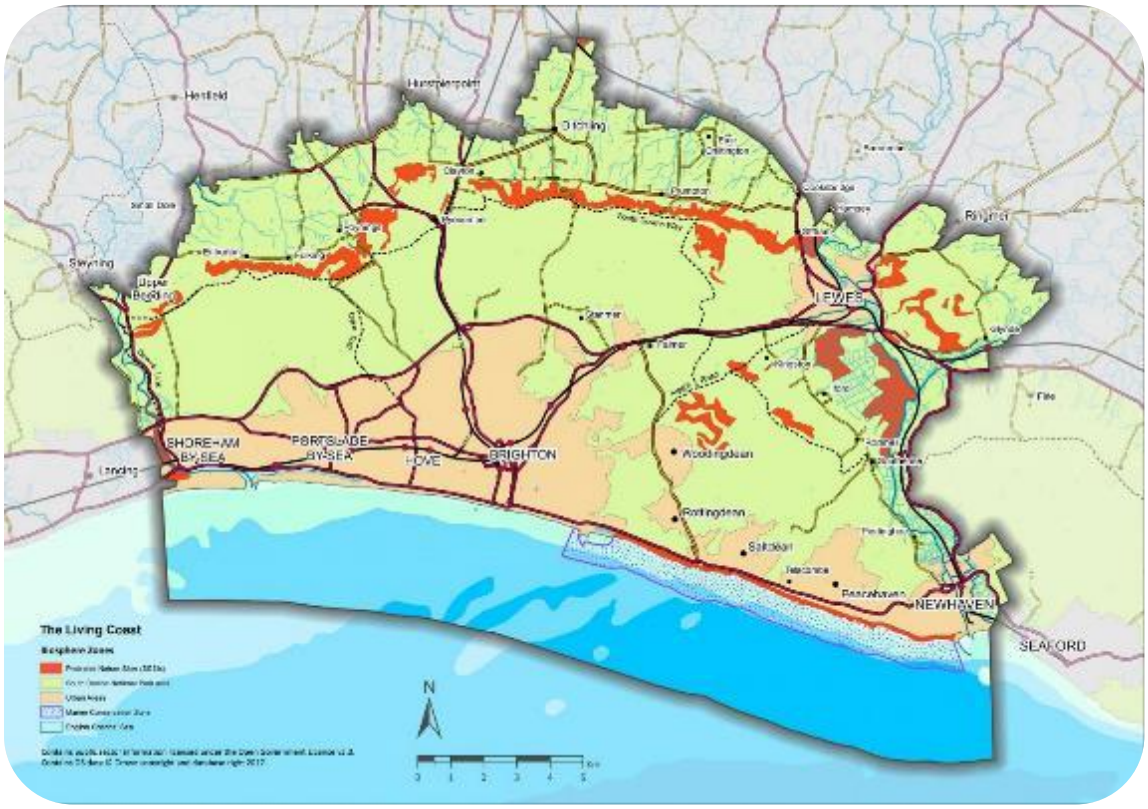
2.62 'The Living Coast' is a UNESCO-designated world biosphere region located in the Brighton and Lewes Downs area, which is designed to promote a balanced relationship between people and the environment; specifically, the land, air, soil and sea, and the wildlife therein.

2.63 The biosphere region covers an area of 390km^2 encompassing the entirety of Brighton & Hove as well as parts of Adur, Horsham, Mid-Sussex and Lewes. It is flanked by the River Adur to the west and the River Ouse to the east, and is one of six such biosphere regions in the UK.

2.64 Biosphere status is granted to areas that display excellence in sustainable development. Biospheres are connected by the UK 'Man & the Biosphere' (UK-MAB) Committee and work closely with the UK National Committee for UNESCO.

2.65 'The Living Coast' biosphere region is displayed in the figure below:

Figure 2-1: 'The Living Coast': Brighton and Lewes Downs UNESCO World Biosphere Region



Source: The Living Coast (2017)

Policy Support for Behavioural Change Measures

2.66 It is worth noting that the LEPs and local authorities in the area are supportive of other initiatives, particularly behavioural change and sustainability. Behavioural change measures include providing improved information to the travelling public.

2.67 Both the West and East Sussex transport plans identify behavioural change initiatives which aim to reduce the amount of car use. Within the West Sussex Local Transport Plan 2011-2026 (LTP3), these include:

- Using school travel planning to coordinate a range of behaviour change activities, skills training and investment priorities to encourage physically active travel behaviour in young people;
- Introducing or supporting innovative behaviour change initiatives such as Bikeit and Easit where there are clear benefits and funding is available; and
- Promoting walking and cycling through school and workplace travel plans and through promotion of national events, walking buses, bike week and Travelwise week.

2.68 Within the East Sussex Local Transport Plan 3 (2011-2026) the following initiatives are listed:

- Promoting the Travelchoice brand, the wider health benefits and $C0_2$ reduction benefits of walking, cycling, public transport and car sharing to change people's travel behaviour by:
  - Better travel information.
  - School travel planning.
  - Voluntary and development led workplace travel plans.
  - Travel awareness campaigns and promotions.
  - Car sharing.
  - Car clubs.

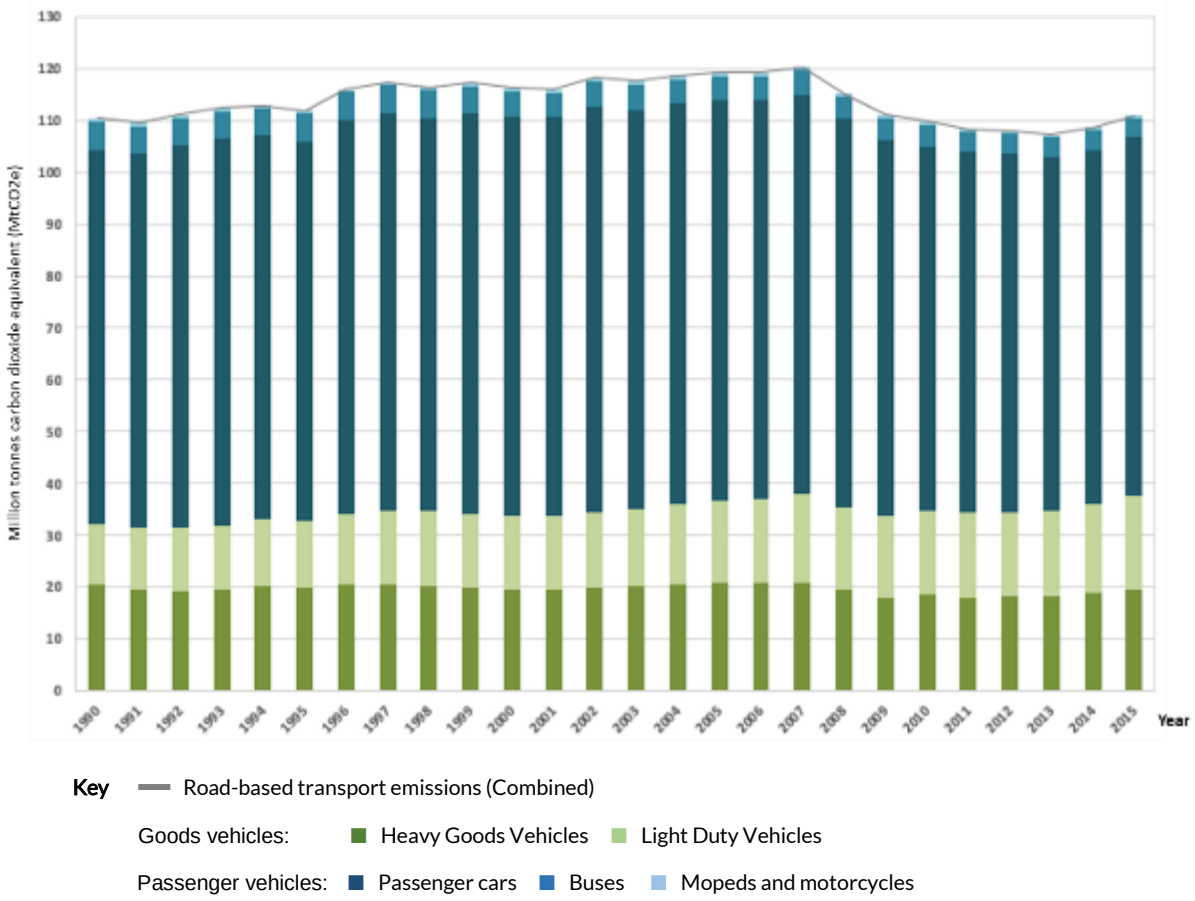
2.69 It should be noted that East Sussex and Brighton & Hove successfully won Access Fund bids in January 2017. This is thought to be an important milestone towards improving sustainable access to workplaces and education over the three year programme period.

Climate Change

2.70 As reported by the Department for Business, Energy & Industrial Strategy (2017) transport is responsible for approximately 24% of the UK greenhouse gas emissions in 2015. These are all virtually attributed to carbon dioxide emissions.

2.71 The most significant source of emissions is known to be the use of petrol and diesel in road transport. Figure 2-2 shows the estimated road-based transport emissions of all greenhouse gases for the UK between 1990 and 2015. Results are given for passenger vehicles and goods vehicles in million tonnes carbon dioxide equivalent ($MtCO_2e$).

Figure 2-2: Estimated road-based transport emissions of all greenhouse gases for the UK from 1990-2015



2.72 As can be seen, passenger cars are the largest contributor to road-based transport emissions. The Department for Business, Energy & Industrial Strategy transport (2017) states that 'between 2014 and 2015 transport sector emissions increased by 2 per cent, which was mostly driven by increased emissions from passenger cars and HGVs, due to increased vehicle kilometres travelled in 2015 which resulted in a higher use of fuel.'

2.73 The aforementioned increase and an undesirable upwards trend for greenhouse gas emissions since 2013, are supported by provisional road traffic estimates for 2016 (Department for Transport, 2017a), which highlight an overall increase at varying rates across all vehicle types over the last 20 years.

2.74 Greenhouse gas emissions remain a very serious issue despite overall lower petrol consumption and improvements in fuel efficiency of petrol and diesel cars.

3. Key Preliminary Findings

3.1 Key aspects of the local plans were considered with particular emphasis on references to the A27 corridor, sustainable transport and development. The majority of plans were largely found to mention similar themes, which can be grouped into four categories.

1) The presumption in favour of sustainable development.
2) Commitment to 'reduce the need to travel' and improvements of sustainable transport.
3) Air Pollution/Quality.
4) High car ownership and A27 Congestion.

The Presumption in favour of sustainable development

3.2 The district local plans for Adur, Eastbourne and Lewes contain specific policies in relation to a presumption in favour of sustainable development, which is consistent with the NPPF.

3.3 In the context of expanding the A27 and its implications to planned development, adverse impacts relating to the potential increase of CO_2 emissions, induced additional traffic, potential increased car usage and undesirable effects on the protected SDNP might put development plans at risk if no alternative interventions are considered and implemented effectively.

3.4 Whilst policy generally states that developments are encouraged to show commitment to reducing the need to travel by car by identifying opportunities to improve access to public transport services and giving priority to walking and cycling movements, there is reduced information on:

- how this might be achieved;
- the role of major infrastructure provision along the A27;
- design standards across the region to promote consistency; and
- preferred region-wide approach to respond in an integrated manner.

Commitment to 'reduce the need to travel' and improvements of sustainable transport

3.5 Four local plans contain specific policies or strategic objectives relating to reducing the need to travel, and all nine contain references to improving public transport networks.

3.6 At a local level, Lewes Adopted Joint Core Strategy Strategic Objective 9 states that the district aims 'to reduce the need for travel and to promote a sustainable system of transport and land use for people who live in, work in, study in and visit the district'. Core Policy 13 on sustainable travel states six ways in which new developments must encourage active travel modes and public transport, and reduce the proportion of journeys made by car.

3.7 Similarly, Adur Local Plan Policy 29 on transport and connectivity states that new development must 'implement an area-wide behaviour change programme to encourage sustainable modes of transport and reduce demand for the private car. This should include a package of travel behaviour initiatives'. Additionally, developments should also be 'located and designed to minimise the need for travel, facilitate and promote the use of sustainable alternatives to the private car'.

3.8 Adur Local Plan encourages proposals to extend the cycle and walking network in the area surrounding the A27, and improving the access across it.

3.9 Arun Local Plan Policy T SP1 states that developments must do three things; strengthen Arun's economic base, reduce congestion, and work to tackle climate change and promote healthy lifestyles.

3.10 Eastbourne Core Strategy Policy D8 on sustainable travel states that 'sustainable travel will be promoted through a variety of measures aimed at reducing the need to travel and reducing the reliance on the private car.' Additionally, '[t]he standard and quality of public transport will be significantly enhanced by developing and strengthening opportunities for bus and rail integration at Eastbourne and Hampden Park railway stations. Bus priority measures are positively featured as they will be promoted along the A2270, A2021; and A259, which will be formally designated as Quality Bus Corridors'. Additionally, all new developments should reduce the need to travel, and prioritise walking, cycling and accessibility to public transport in their design layouts.

3.11 Whilst all these aspirations are stated through various policy documents, the sub-region faces the challenge to ensure consistency of approach.

Air Pollution/Quality

3.12 Four local plans contain specific references or policies relating to reducing air pollution, improving air quality, or concerns about air quality as demonstrated by the designation of AQMAs.

3.13 Adur Local Plan Policy 29 Transport and Connectivity sets out that new developments must contribute to the mitigation of air pollution, particularly in AQMA. It also states that air quality assessments may be required.

3.14 Chichester Local Plan identifies transport movements and traffic congestion as a key factor in the decline of air quality in the city, resulting in the designation of three AQMAs. The designation of an AQMA shows that the concentration of nitrogen dioxide exceeds a health based government air quality standard.

3.15 Lewes Adopted Joint Core Strategy explicitly identifies traffic as a key cause of the AQMA declared in Lewes town centre. Levels of nitrogen dioxide in Newhaven town centre are also close to the national limits.

3.16 Mid Sussex District Plan also expresses a concern for air quality, particularly in relation to habitats within the Ashdown Forest Special Area of Conservation are sensitive to atmospheric pollution, especially from road traffic emission. As laid out in the NPPF, developments, which have a negative impact on protected areas such as this, may not be supported.

3.17 Current government advice based on the Making Every Contact Count framework suggests that integrated approaches to health should be combined in sustainable travel initiatives. The cost to the public health system of long-term preventable diseases can be doubly tackled by encouraging active travel modes, thus improving air quality to a health-based acceptable level.

High Car ownership/Dependency and A27/A259 Congestion

3.18 Mid Sussex and Worthing directly identify high levels of car ownership in their districts. In Mid Sussex car ownership is revealed to be high with 86.4% of households having one or more cars or vans, compared to 74.2% nationally, and 44.2% of all households have two or more cars compared to 32.1% nationally, which further raises the possibilities of people opting for the convenience of private car over more sustainable modes of transport. However, it should be remembered that many people do not have routine

access to a car even if their household has one. This can amount to over half the population at any one time.

3.19 In Worthing car ownership is slightly higher than the national average and, the town is characterised by areas of heavy road congestion, especially during the morning and evening peaks. As identified from existing evidence, this appears to be especially prevalent around the northern edge of the town, where the A27 is said to provide Worthing's only long distance through route. Furthermore, the A259 coast road, that connects Worthing to the neighbouring centres at Lancing and Shoreham-By-Sea to the east and Littlehampton to the west, also experiences significant peak time congestion. More than 15% of the working population is reported to travel more than 15 miles to work, resulting in high car dependence and congestion. Congestion and unreliable journey times have a negative impact on air quality, and are reported to hinder inward investment and growth (Worthing Borough Council, 2011).

3.20 Adur, Chichester, Wealden (in relation to Polegate), Worthing and Lewes local plans all report congestion on the A27 as a stress to the accessibility of the district. Adur, Eastbourne and Worthing also mention the A259 as a problem-road for congestion.

3.21 As outlined by the Worthing Local Plan, improving the public transport and active travel networks can also improve the reliability of journey times, encouraging the placement of employment centres in Worthing and improving economic growth, a key goal of every district's local plan.

Traffic Conditions along the A27 Corridor

3.22 From site observations, it is recognised that the majority of the A27 is dual carriageway although three sections of the corridor are single carriageway. These three sections are located at Arundel, Worthing and East of Lewes.

3.23 Based on the evidence gathered, the greatest average daily weekday flows are found along the A27 near Brighton & Hove and Chichester. Additionally, the data reveals that goods vehicles represent more than 15% of the traffic.

3.24 Overall link capacity appears to reach saturation levels at a number of sections including those in the vicinity of Arundel, Worthing, Lancing and East of Lewes. This might result in low levels of operational performance.

3.25 This issue appears to be critical at Worthing and Lancing, where relatively high flows of traffic and low average speeds at peak times are identified.

3.26 Similarly, existing data reveals possible issues related to existing levels of demand and junction performances around the Chichester area.

3.27 It is also recognised that the close proximity to the A259, particularly at Chichester and Arundel, Worthing and Lancing, is likely to generate significant interdependencies between the A259 and the A27 corridors.

4. Overview of Transport Proposals, Improvements and Schemes

4.1 Various studies have been completed for the A27 corridor in the last 15 years. Highlights of these studies are provided as follows.

South Coast Multi-Modal Study (SoCoMMS)

4.2 This study was prepared for the Government Office for the South East (Halcrow et al, 2002) and covered a study area between Thanet in Kent and Southampton in the west.

4.3 The study was primarily developed to identify and investigate congestion, safety and environmental issues, guided by the Government's five key objectives concerning the natural environment, safety, economic activity, accessibility and integration.

4.4 As set out in the final report key considerations of the study included:

- the relationship between transport and land-use.
- urban regeneration with a view to promoting equitable economic development.
- protection and enhancement of the regions bio-diversity, landscape and heritage.
- increased sustainability of rural communities.
- reduced reliance on cars.
- social inclusion.

4.5 The SoCoMMS study comprised a number of strategic recommendations to tackle congestion complemented by measures to improve port and airport access, public transport and access to growth.

4.6 Recommended improvements that were taken forward for development comprised small scale local improvements on the A27 between Worthing and Lancing. Other proposals for the A27 corridor, which were rejected, comprised:

- Tolling of motorway and trunk roads although this option was rejected due to likely displacement of traffic on to local roads.
- Area wide road pricing rejected due to lack of alternative modes.

- Improving public transport rejected as it would have limited effect on the overall use of private cars.
- Soft measures such as walking and cycling interventions, travel planning, Quality Bus Partnership measures and marketing were all rejected as they would not meet demand for road travel.

Bullen Consultants/Highways Agency Study

4.7 This commission was developed in 2004 and sought to investigate in more detail all the problem areas highlighted by the SoCoMMS, specifically those affecting Arundel Worthing/Lancing and Beddingham to Polegate.

4.8 The study considered less environmentally damaging alternatives to SoCoMMS and recommended the following options for further investigation, as set out by Parsons Brinckerhoff (2015a).

Arundel Improvement Options:

- Bypass around Tortington Common and Lake Copse (offline dualling).
- Flyover at Ford Road roundabout (online dualling).
- At grade junction at Ford Road roundabout (online dualling).
- 200m-300m tunnel west of Ford Road roundabout (online dualling).

Worthing Improvement Options:

- Salvington - Traffic signal junction with widened two lane approaches.
- Offington - Grade separation (flyover).
- Grove Lodge -Grade separation (underpass).
- Lyons Way -Improved signalisation and widened three lane approaches.
- Bustical Lane - Improved signalisation and widened three lane approaches.
- Manor Road -Signalisation of the nodes and widening of entries.

Beddingham to Polegate Improvement Options:

- Northern bypass east of Middle Farm and/or southern bypass of Selmeston.
- Link from Cophall to A27 west of Folkington road, including grade separation at Cophall and roundabout where re-joining A27.

- Improvements to local access junctions between Beddingham and Polegate and minor widening.
- The report stated that a combination of the Selmeston Bypass, Folkington Link and minor widening/junction improvements provided a coherent strategy for the A27 between Beddingham and Polegate.

Worthing/Lancing Task Force Group

4.9 Following the Bullen Consultants/Highways Agency Study, PB was commissioned in 2007 to take forward the Worthing and Adur Strategic Transport Model (WASTM) and the development of a transport strategy.

4.10 As set out by Parsons Brinckerhoff (2015a) 'The WASTM study set out a package of highway improvement measures that could be taken forward alongside public transport and travel demand management measures. It is recognised that the Highway Agency (HA) and WSCC did not progress any of these measures.

Worthing Core Strategy Modelling

4.11 PB was commissioned in 2010 to look at the highway impacts of Worthing Borough Council's Core Development Strategy.

4.12 The report concluded that through the transport assessment process and localised highway improvements, proposed developments would not have a significant impact on the area's highway network.

A27 Corridor Feasibility Study

4.13 This study sought to identify potential infrastructure investment opportunities on the A27, particularly at three specific locations or priority hotspots, namely, Arundel, Worthing and Lancing and East of Lewes.

4.14 As described in a leaflet (Department for Transport, Highways Agency, 2015), the main drivers for the development of future interventions are the need to reduce congestion and delays for road users; reduce separation of communities; and improve air quality and safety.

4.15 Although the focus of this study (Department for Transport, 2015b) was to explore road-based opportunities on the strategic and local road networks, it also took into account rail availability and local public transport services.

4.16 Overall objectives set out for the study are as follows:

- Identify and assess the case, deliverability and timing of specific infrastructure investment that best addresses existing and future priority problems on the A27.
- Understand the balance of benefits and impacts from potential individual investment proposals and any additional benefits of impacts from potential packages of investment in the national and local transport networks.
- Evidence, where possible, the wider economic impacts from the transport investment in the corridor.

4.17 Additionally, the following intervention specific objectives (Parsons Brinckerhoff, 2015b) were defined:

- Reducing travel time and improving journey time reliability in the key hotspot areas.
- Reducing severance and pollution impacts.
- Enabling local planning authorities to manage the impact of planned growth and in doing so support the wider economy.
- Providing safer roads which are resilient to delay and which are able to adequately cater for the impacts of adverse weather.
- Minimising impacts on the natural environment and optimising environmental opportunities and mitigation.
- Providing opportunities for improved accessibility for all users.

4.18 Over 40 options were developed following the review of past studies and were considered at a high level of detail. Only those that met the study objectives were developed further.

4.19 Details of the retained options taken forward for assessment using DfT's Early Assessment and Sifting Tool (EAST) are as follows:

At Arundel

- three new bypass options:
  a) partly through the National Park;
  b) avoiding the National Park; or

c) closer to the town limits through the National Park.

- online dualling of the existing road including a 250 metre tunnel and a short stretch of bypass; and
- online improvements.

At Worthing and Lancing:

- tunnels throughout;
- combinations of tunnel, bypass and dualling;
- online dualling throughout;
- online junction improvements; and
- travel demand management and public transport.

East of Lewes:

- two versions of a new offline route - (a) single carriageway and (b) dual carriageway;
- bypasses at (a) Selmeston and (b) Wilmington;
- online improvements at Selmeston;
- new link road at Folkington;
- Polegate junction improvements; and
- Low cost online improvements.

Public Transport and Active Travel References

4.20 The A27 Corridor Feasibility Study sets out seven public transport and active travel options that were taken through for further assessment as shown below:

At Arundel

- Improved rail facilities.
- Improved bus routes through Arundel.
- New cycle routes to Rail Station and SDNP. Creation of SDNP Cycle Hub.

At Worthing and Lancing

- Bus Rapid Transit option connecting Worthing and Brighton.
- Improvement of cycling and walking N-S of A27.

East of Lewes

- Eastbourne to Hailsham quality bus corridor.
- Extension of shared space cycleway from Lewes to Polegate.

4.21 It should be noted that a number of these were combined into investment propositions as they were considered to better meet objectives in combination with other options.

4.22 Notwithstanding the selection options, the option assessment report also reveals that:

> *'The evidence demonstrates that whilst bus/rail network or alternative methods such as Light Rail and demand management measures may provide opportunities for modal transfer, these measures are unlikely to be able to adequately address the study objectives of reducing travel time, improving journey time reliability and enabling local planning authorities to manage the impact of planned growth.*
>
> *The Government's policy on the SRN is to ensure that it operates effectively and efficiently, and that it supports and facilitates economic growth. A more efficient network would enable firms reliant on the A27 for access to operate more efficiently, and encourage investment in existing and new businesses. With greater certainty over journey times, businesses would be better positioned to compete internationally.*
>
> *In light of current capacity constraints, the planned growth in housing and employment will likely result in the worsening of congestion and delays. There are clear limitations to alternative public transport solutions, and hence there is a need to invest in road-based solutions.'*
>
> (Parsons Brinckerhoff, 2015b)

4.23 Consistent to this rationale, there is also specific evidence that a travel demand management /public transport option linked to Worthing was not assessed further as it did not address sufficiently the need to reduce travel time and improve journey time reliability in the area. Instead the study assumed that 'sustainable transport measures would be pursued but could only make a limited contribution'. Likewise, the quality bus corridor was assumed by the study to be brought forward via local developing planning.

Key Study Outcomes

4.24 Options which indicated strategic fit, potential for deliverability and potential value for money (VfM) were subsequently prioritised for further consideration. Against these considerations, the final stage of the A27 feasibility study prioritised:

- two of the Arundel bypass options;
- three markedly different tunnel and online improvement options for Worthing/Lancing;
- combined option for Arundel Option A and Worthing Option F - due to the close links between the Arundel and Worthing schemes; and
- all five options for the section east of Lewes.

4.25 It should be noted however, that the options taken forward by Highways England were not the same as stated here.

Greater Brighton and Coastal West Sussex Background Papers

4.26 In 2015, Nathaniel Lichfield Partners Ltd. and Interfleet Transport Advisory produced a series of three background papers for the GBEB.

4.27 The aim of these papers was to identify a strategy for achieving long term sustainable growth across Greater Brighton and Coastal West Sussex (GBCWS), with a focus on key strategic issues such as employment land, housing, transport and other infrastructure.

4.28 The papers focused on three factors (Greater Brighton Economic Board, 2015), which were considered individually and collectively critical as drivers of growth:

- Economy.
- Housing market.
- Transport system.

4.29 This piece of research centred on themes that are consistent with wider aims for the region – such as broad economic growth, an increasingly polycentric approach, and environmental improvement. Therefore, in terms of transport, the strategies aimed to:

- Improve access to labour markets.

- Improve connectivity across the region.
- Increase non-car mode share.

4.30 The process for preparing the background papers followed a three-stage methodology:

1) Evidence review and data gathering
   - Based upon a series of key questions; 'Where do people travel to work outside of the area? Where do people travel within the area? How do people travel, and how has this changed? What are the known transport constraints? Where is transport investment proposed?'
   - The analysis drew upon existing evidence produced at Local Authority, county and LEP scale, supplemented by latest national datasets where available.
2) Synthesis and identification of key themes
   - Involved drawing together the existing research alongside new analysis to identify a number of key 'themes' for considering the dynamics of Greater Brighton and Coastal West Sussex, and the future growth potential of these areas individually and on a combined basis.
3) Identifying implications and intervention options
   - From the key themes identified in step two, the relevant intervention options, implications and resources were identified.
   - This considered it critical that Greater Brighton and Coastal West Sussex do not function in isolation from surrounding areas, and that these wider relationships are critical for all of the drivers of growth, including transport.

4.31 Across each of the stages, consultation and engagement was undertaken with a number of relevant stakeholders, including relevant specialists and relevant offices within local authorities.

4.32 The following are key findings identified in the transport background paper.

Access to Labour Markets

4.33 Journey times, reliability, costs and last mile impacts were all found to be key factors affecting journeys to work negatively. These factors were featured as key barriers to travel-to-work.

4.34 The paper highlights that the 'level of employment growth expected in the GBCWS areas is expected to be around 57,000 by 2031'. It also highlights that local labour markets are

insufficient to fulfil specific labour-market requirements thus the importance of minimising existing transport constraints.

Access to Markets and Services

4.35 Similarly, transport constraints were found on general connectivity of the region for other type of trips with particular emphasis on the limitations of car and rail modes in accessing markets and services beyond the near hinterland.

4.36 Intervention opportunities that were identified included integrated packages of transport measures including highway improvement schemes, the enhancement of public transport and the development of walking and cycling networks.

Increasing Capacity through Sustainable Transport

4.37 The transport paper states that although there 'has been significant progress in enabling people to access more sustainable transport modes in Brighton & Hove', key questions moving forward include how to extend this, both within the city and into the suburban and rural parts of the study area. Evidence in the paper also 'suggests that this is critical in breaking the link between economic and traffic growth and therefore promoting sustainable economic growth.'

Future Opportunities and Actions

4.38 In order to support jobs and match housing forecasts, three particular areas, where transport has a role to play, were identified:

1) Improvements to the A27
   - 'Evidence suggests that this [the lack of improvements to the A27] represents a significant constraint on east-west travel for business and commuting travel. Housing and strategic site location will increase traffic on key strategic routes and the A27 (as well as the A259 and connecting roads), will be a focus for growth.'
2) Rail and bus provision
   - 'Both north-south and east-west rail provision can help support growth and increase the in-scope geography for those seeking work or new business locations. The role of bus in improving connectivity for Adur, Worthing, Brighton & Hove and Newhaven can also support the development of housing and employment.'
3) Mode shift

- 'Brighton & Hove has seen high levels of economic growth as well as shifts to non-car based modes. Enabling more mode shift across GBCWS, particularly in other urban areas may also support sustainable growth by creating headroom in the relationship between economic and traffic growth.'

4.39 The paper identified significant trade-offs that need to be considered with these options. For example, 'creating a more attractive rail service across the area with express services [that] may compromise the "metro" nature of existing Greater Brighton rail services or require significant investment in order to create an enhanced service which meets both local and longer distance needs.'

4.40 The widening of the A27 has been controversial in the study area, not least because of the presence of the National Park. The paper quotes DEFRA's guidance on road building through National Parks ('there is a strong presumption against any significant road widening…'), and the SDNPA ('...a balance needs to be struck - nationally - between the need for accessibility and mobility and the need to safeguard the National Park landscapes and communities').

4.41 Table 4-1 shows various strategy elements and their contribution to each theme.

Table 4-1: Strategy elements and contribution to each theme

Strategy element	Relevant themes			Delivery stakeholders
	Access to labour	Improving area-wide connectivity	Improving non-car mode choice	
A27 pinch point relief: E-W/Brighton incl Brighton by-pass junctions	✓✓	✓✓		Highways agency, DfT, Local Authorities
Removing bottlenecks around ports		✓✓		Local Authorities, Port Authorities, Port owners (if not owner)
West Coastway -Brighton rail capacity	✓✓	✓✓	✓✓	Network Rail, DfT, TOC, Local Authorities
Brighton Mainline capacity	✓✓	✓✓	✓✓	Network Rail, DfT, TOCs, Local Authorities
Service pattern improvements: B&H, mid-Sussex and Crawley/ Gatwick	✓✓	✓✓	✓✓	Network Rail, DfT, TOCs, Local Authorities

Strategy element	Relevant themes			Delivery stakeholders
	Access to labour	Improving area-wide connectivity	Improving non-car mode choice	
East of Brighton rail service improvements	✓✓	✓✓	✓✓	Network Rail, DfT, TOC, Local Authorities
Rail journey time improvements	✓✓	✓✓	✓✓	Network Rail, DfT, TOC, Local Authorities
New direct route services via schemes such as Arundel Chord	✓✓	✓✓		Network Rail, DfT, TOC, Local Authorities
Last mile peak-time access to larger urban areas:				Highways Agency, Local Authorities, bus operators, developers
• **Traffic flow management through ITS and transport choice**	✓	✓✓		
• **Park & Ride options**	✓	✓✓	✓✓	
Non-car mode choice:				Local authorities, developers, local business, (eg. New tenants on strategic sites), potential sponsors
• **Improvements to wayfinding, pedestrian prioritisation, safe havens**			✓	
• **Cycling friendly traffic engineering**	✓	✓	✓	
• **Quiet/safe route creation**	✓	✓	✓	
• **Residential and workplace secure storage**	✓	✓	✓	
• **City bike schemes for business travel**		✓	✓✓	
• **Wheels2Work expansion**	✓✓	✓	✓✓	
Integrated ticketing	✓	✓✓	✓✓	Local Authorities, bus operators, TOCs

Strategy element	Relevant themes			Delivery stakeholders
	Access to labour	Improving area-wide connectivity	Improving non-car mode choice	
A review of bus fares and affordability	✓✓	✓	✓	Local authorities, operators
Mixed mode choice for port access (remove pedestrian/commercial vehicle conflict)			✓✓	Local authority, Port Authorities, Port operators
Improvement in freight route management		✓✓		Highway Agency, local authorities, Port Authorities, Port operators
✓✓ = Major contribution to theme, ✓ = Supporting contribution to theme				

5. Baseline Conditions

Car Ownership

5.1 Table 5-1 shows indicative car ownership levels for the study area against the regional and national averages. As can be observed, the number of households with one car or van is higher than both the regional and national averages (43.3% against 41.7% and 42.2% respectively). Similarly, the number of households with 2, 3 or 4 or more cars or vans is higher in the study area than the national average, however is lower than the regional average.

5.2 Data also reveals that the number of households with no cars or vans is lower in the study area than the national average (22.6% against 25.8%) and higher than the regional average (18.6%).

Table 5-1: Car ownership levels

Area	No cars or vans in household	1 car or van in household	2 cars or van in household	3 cars or van in household	4 or more cars or van in household
Study Area	22.6%	43.3%	25.9%	5.9%	2.3%
South East	18.6%	41.7%	29.8%	7.1%	2.8%
England	25.8%	42.2%	24.7%	5.5%	1.9%

5.3 Appendix 2 shows the spread of car ownership in the study area at a Lower Super Output Area (LSOA[3]) level. As can be seen from this appendix, the number of households without a car or van is generally greatest close to the coast, and in urban areas such as Brighton and Eastbourne.

5.4 In contrast, the number of households with one car or van is more evenly spread across the study area, with the number of households with one car or van being lowest towards the north and north east of the study area.

[3] LSOAs are levels used by census statistics. Each area is identified taking into account measures of proximity and social homogeneity (i.e. type of dwellings and nature of tenure). LSOAs have an average of 1,500 residents and 650 households.

5.5 Lastly, the number of households with two or more cars or vans is greatest towards the centre and north of the study area. Furthermore, the number of households with two or more cars or vans is lowest towards the coast, and in more urban areas such as Brighton.

Age-Distribution Information

5.6 Table 5-2 shows the age structure of the population in each local authority in relation to the study area from the 2011 census. The values shown in the table are provided as percentages of the total population.

Table 5-2: Age Structure of local authorities in the study area against regional and national average

Area	Age 0 to 19	Age 20 to 29	Age 30 to 44	Age 45 to 59	Age 60 to 64	Age 65 and over
Adur	22%	10%	19%	20%	7%	22%
Arun	20%	10%	17%	19%	8%	26%
Brighton and Hove	22%	19%	24%	18%	5%	13%
Chichester	21%	10%	17%	20%	8%	25%
Eastbourne	22%	12%	18%	18%	7%	22%
Horsham	23%	9%	19%	22%	7%	19%
Lewes	22%	10%	17%	21%	7%	23%
Mid Sussex	24%	10%	20%	21%	7%	18%
Wealden	22%	8%	17%	22%	8%	23%
Worthing	22%	11%	20%	20%	6%	21%
South East	24%	12%	20%	20%	6%	17%
England	24%	14%	21%	19%	6%	16%

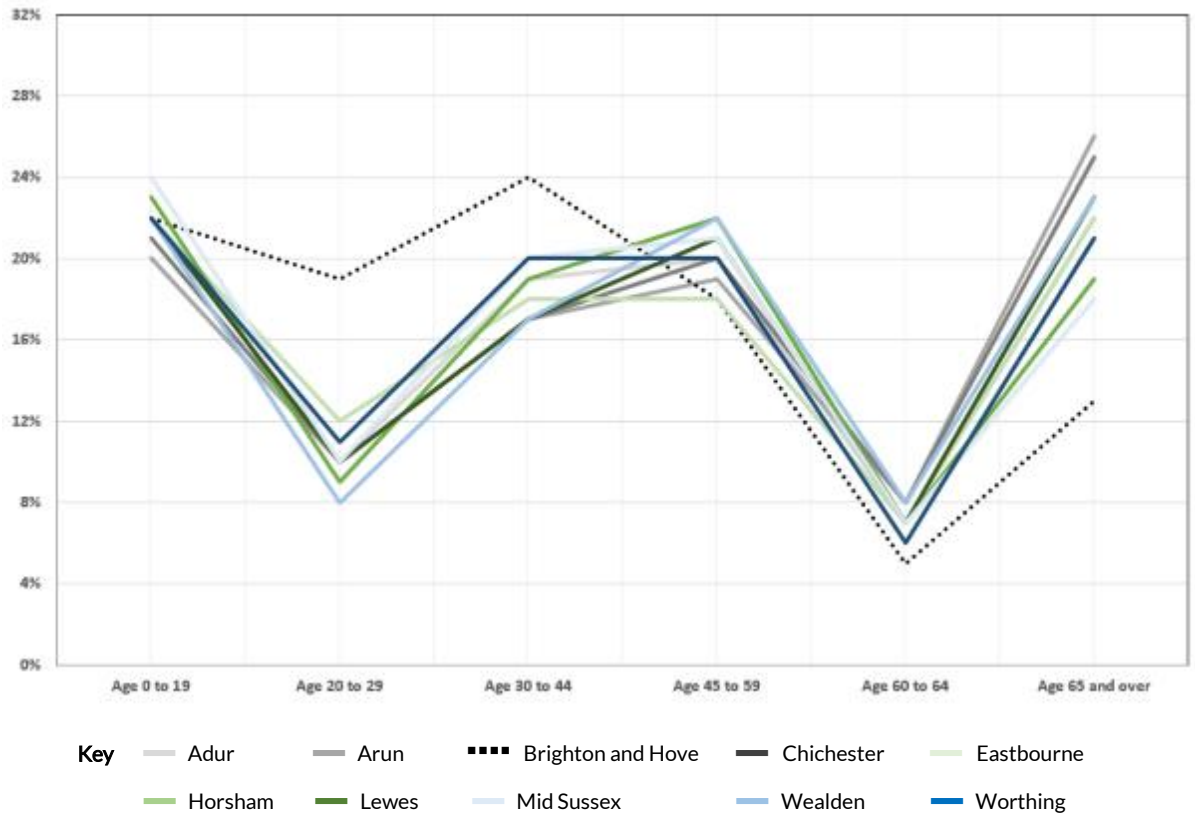
5.7 The proportion of the population aged between 0 and 19 in the study area is on average lower than the regional and national average, with the exception of Mid Sussex. As can be identified, this is also apparent in the age brackets 20 to 29 and 30 to 44.

5.8 For the 45 to 59 and 60 to 64 age brackets, the proportion of the population within these categories are largely in line with both the regional and national average. In contrast, the

proportion of the population aged 65 or over is significantly higher for most local authority areas in comparison to both the South East regional average and the national average, though this is not the case in Brighton and Hove.

5.9 Figure 5-1 displays the age-distribution for the ten Local Authorities within the study area. This figure highlights a distinctly different age-distribution pattern for Brighton and Hove from the 2011 Census.

Figure 5-1: Age-Distribution key local authorities within the study area



5.10 As can be seen, Arun District shows the lowest proportion of population aged between 0 and 19 and the highest proportion of population greater than or equal to 65. Conversely, Mid Sussex District depicts the highest proportion of population aged between 0 and 19 and the lowest proportion of population greater than or equal to 65 apart from Brighton and Hove, which shows a comparably low proportion of people age 65 and over.

Method of Travel to Work

5.11 Table 5-3 shows the modal split against the regional and national averages. Results reveal that car use is higher in the study area than against the national average (62%

against 60%), however it is lower than the regional average (65%). The number of people travelling by train and on foot is also higher than national averages.

5.12 For bus usage, the number of people using buses in the study area is lower than the national average (6% against 8%). However, it is slightly higher than the regional average (5%).

Table 5-3: Modal split of study area against regional and national average

Mode of Travel	Underground, metro, light rail, tram	Train	Bus, minibus or coach	Taxi	Motorcycle, scooter or moped	Driving a car or van	Passenger in a car or van	Bicycle	On foot	Other method of travel to work
Study Area	0%	8%	6%	0%	1%	62%	5%	3%	13%	1%
South East	0%	8%	5%	0%	1%	65%	5%	3%	12%	1%
England	4%	6%	8%	1%	1%	60%	5%	3%	11%	1%

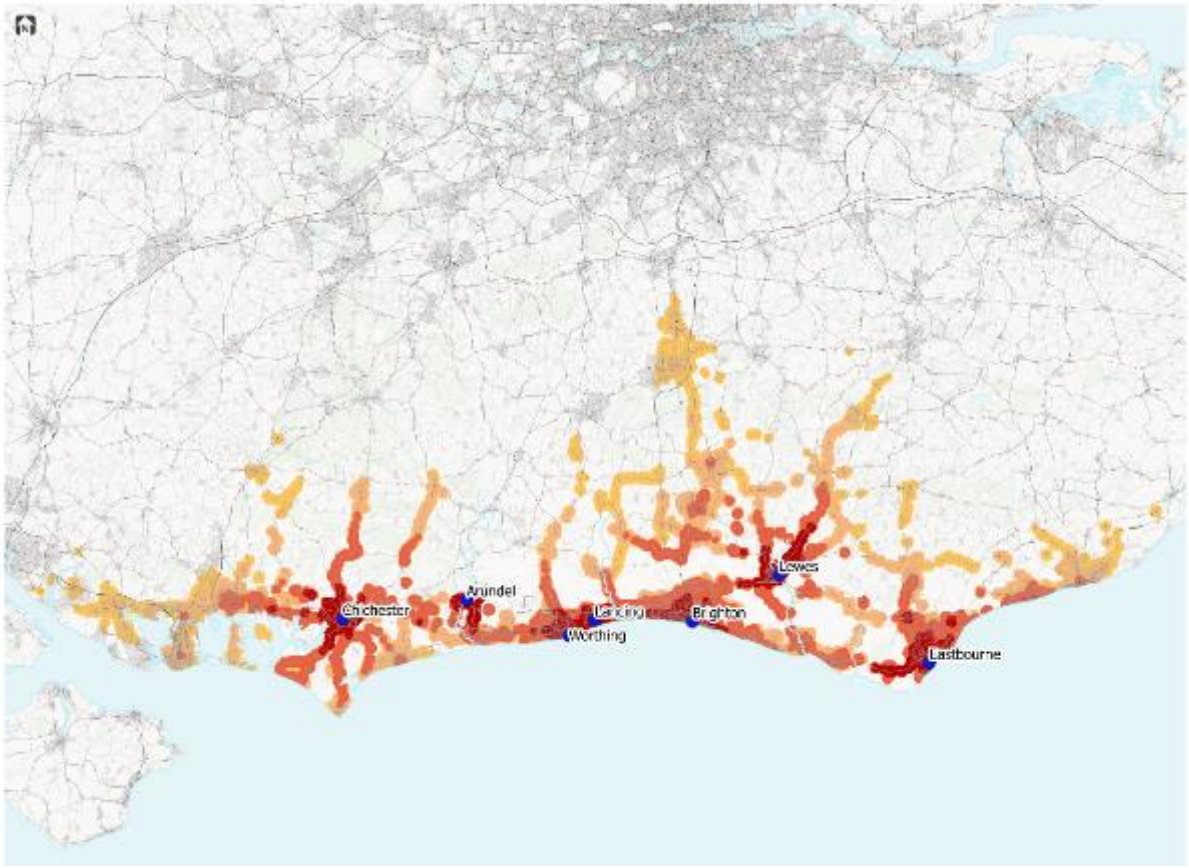
Public Transport Accessibility

5.13 Figure 5-2 illustrates how accessible seven of the key town/city centres within the study area are by public transport.

5.14 It should be noted that accessibility findings were derived from all public transport services for the South East including train services originating in the South East and travelling to London but excludes the London PT network. Accessibility was measured using AM peak timetable information[4]. Results were split by 15-minute intervals.

[4] AM peak is defined between 07:00am and 09:00am

Figure 5-2: 60-min public transport accessibility to key town/city centres within the study area



5.15 Overall public transport accessibility appears to be better east of Worthing and Lancing in proximity to the city of Brighton & Hove. Similarly, Brighton & Hove accessibility is favoured by Thameslink services between Brighton and Bedford

5.16 Accessibility for parts of the study area between Chichester and Bognor Regis, and between Brighton and Eastbourne appears less good. This suggestion reflects the relatively short travel distances that are linked to journey times of over 45 mins. The same can largely be said for parts of the study area between Lewes and Eastbourne.

5.17 Preliminary evidence suggests that many local/county services linking town centres are infrequent with a few services travelling along the A27.

5.18 Further detail in relation to public transport accessibility for each of the seven towns is available within Appendix 3.

5.19 Table 5-4 sets out the estimated resident population served by public transport for each 15-minute interval within 60 minutes of individual town centres. Percentages relative to each town are also shown. These percentages are estimated based on the total resident population currently served to each key destination (town).

Table 5-4: Estimated resident population served by public transport within 60 minutes of key town centres

Public Transport Accessibility	Resident Population within 60mins of key town centres							
	Chichester	Arundel	Worthing	Lancing	Lewes	Brighton	Eastbourne	All towns
0-15 mins	25,915 (4%)	3,939 (4%)	45,954 (9%)	53,070 (8%)	16,230 (2%)	125,947 (18%)	56,367 (10%)	309,820 (21%)
15-30 mins	81,686 (12%)	19,530 (18%)	129,001 (26%)	259,115 (40%)	90,333 (13%)	291,940 (42%)	160,643 (28%)	727,190 (49%)
30-45 mins	340,844 (50%)	48,208 (44%)	279,419 (56%)	463,190 (72%)	398,478 (57%)	486,629 (69%)	289,231 (50%)	1,129,178 (76%)
45-60 mins	686,461 (100%)	109,491 (100%)	495,327 (100%)	642,344 (100%)	699,561 (100%)	702,780 (100%)	577,702 (100%)	1,479,450 (100%)

5.20 A comparatively high number of resident population (>550,000) is noticed to be served within 60 minutes of Chichester, Lancing, Lewes, Brighton and Eastbourne town centres. Overall accessibility to Worthing decreases slightly serving under 500,000 people.

5.21 Conversely, Arundel displays the lowest number of resident population within 60 minutes by public transport with 109,491 residents.

5.22 In terms of towns within the high end of the resident populations (>550,000), public transport accessibility within the shortest journey time interval (0-15mins) is observed to be particularly good around Brighton with 18% of the resident population. Eastbourne, Worthing and Lancing display 10%, 9% and 8% of the resident population respectively.

5.23 Conversely, Lewes and Chichester show relatively low percentages within the shortest journey time interval with 2% and 4% of the resident population respectively. This might be driven by different spatial distribution patterns and geographical configurations.

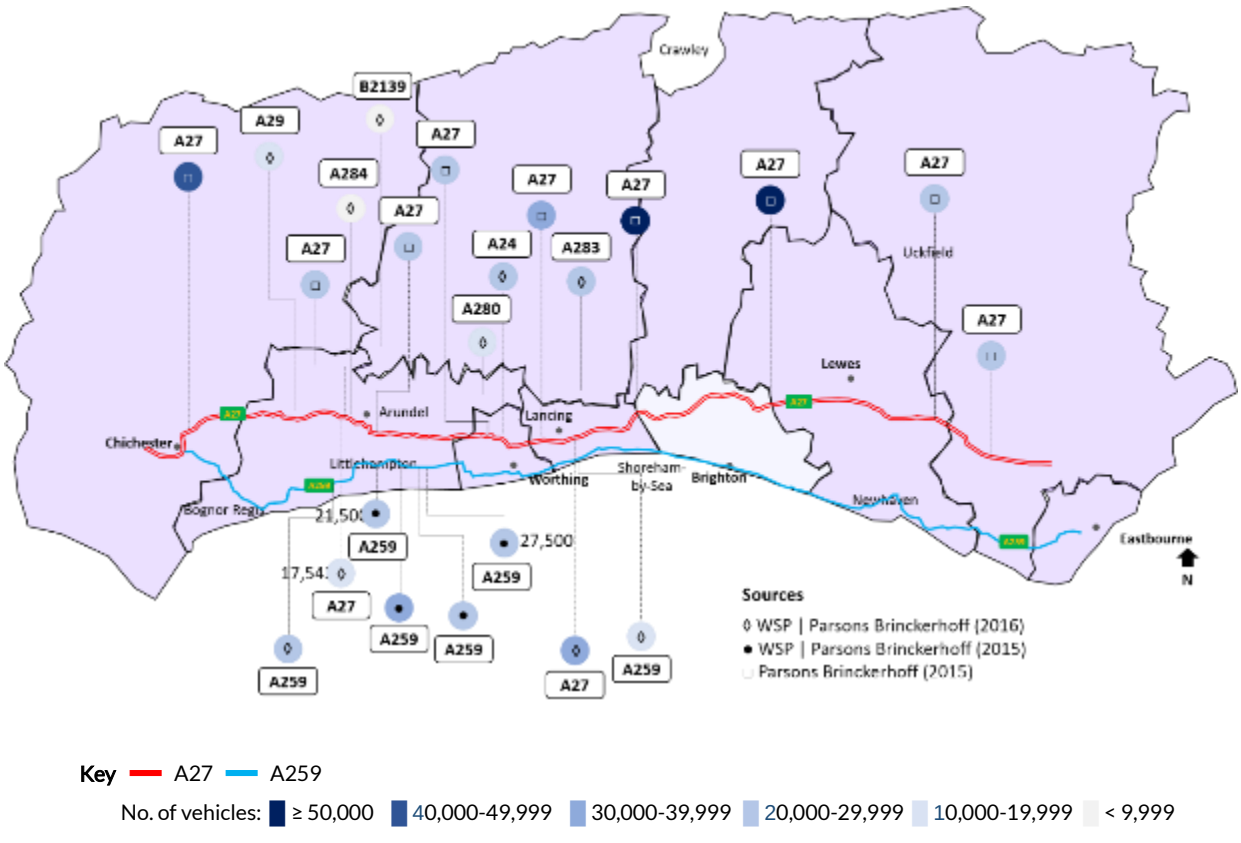
Indicative Travel Conditions

5.24 WSP | PB produced a traffic data collection report on behalf of HE in relation to the A27 Worthing-Lancing and Arundel Scheme (WSP | Parsons Brinckerhoff, 2016). This report was prepared as part of a study that seeks to inform the identification of improvements options for the A27 in West Sussex. Average daily weekday (07:00-19:00) traffic flows were extracted from this report for ten Automatic Traffic Count (ATC) survey locations.

5.25 WSP | PB also produced a business case for the A259 Corridor Improvements scheme on behalf of West Sussex County Council (WSP | Parsons Brinckerhoff, 2015). Average Annual Weekday Total (AAWT) link flows were also established for four links along the A259. Two-way average daily traffic volumes in 2012 for other sections of the A27 were extracted from the A27 Corridor Feasibility Study (Parsons Brinckerhoff, 2015a). This latter study reveals that 'overall, goods vehicles [are noted to] represent more than 15% of the daily traffic volumes along A27'.

5.26 Figure 5-3 displays indicative traffic flows using six bands. These bands illustrate the estimated number of vehicles using different parts of the road network.

Figure 5-3: Average daily weekday flows (07:00-19:00) - ATC

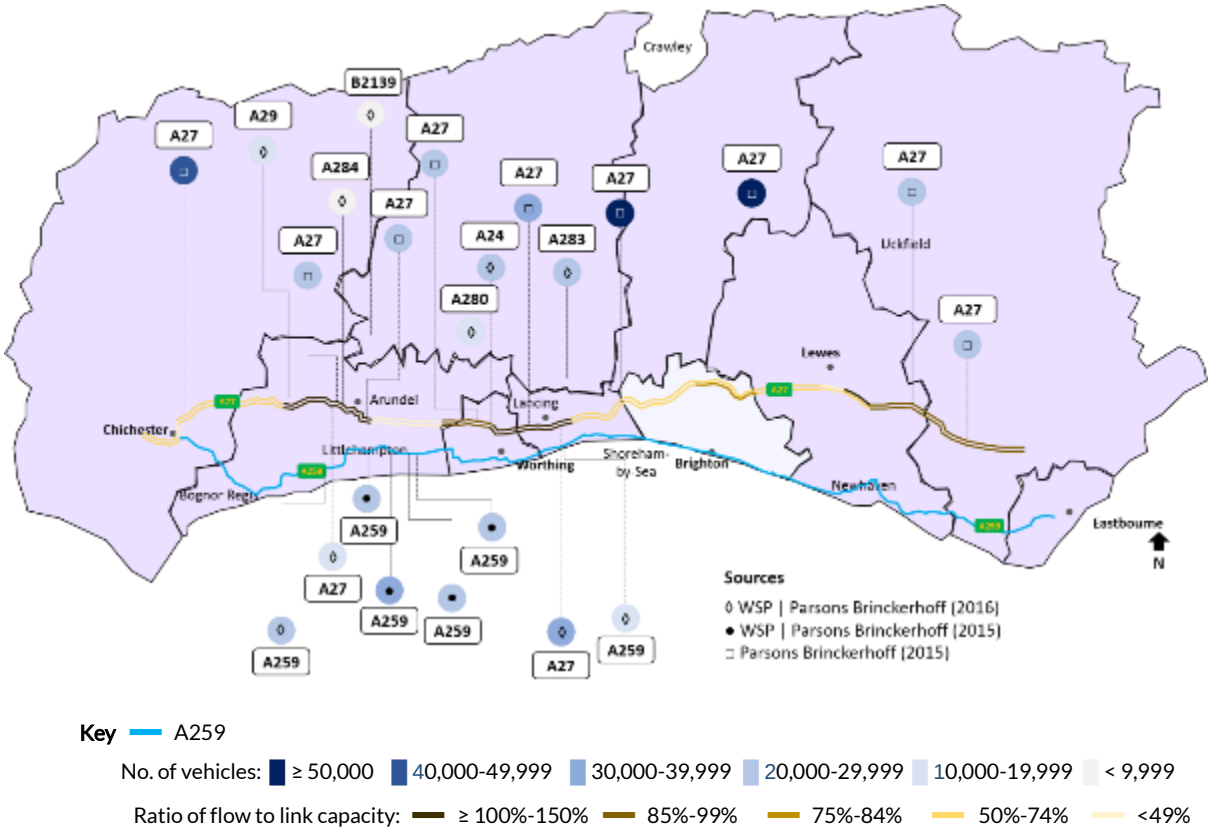


5.27 While survey points do not cover the entire road network within the study area, these figures provide a snapshot of the total number of vehicles using key parts of the network according to available traffic data. It should be noted that no surveys were undertaken as part of our study. The scope of our analysis is constrained by having access to transport and traffic survey results.

5.28 To help understand traffic conditions along the A27 corridor, indicative ratios of flow to link capacity were also extracted for several links (i.e. sections of road between two junctions) of the A27. Ratios of flow to link capacity are one of the main factors that commonly influence traffic queues and delays.

5.29 Figure 5-4 shows the ratio of flow to link capacity for each direction of travel based on information available from the A27 Corridor Feasibility Study (Department for Transport, 2015b). It should be noted that this data has been overlaid on the average daily weekday flows map.

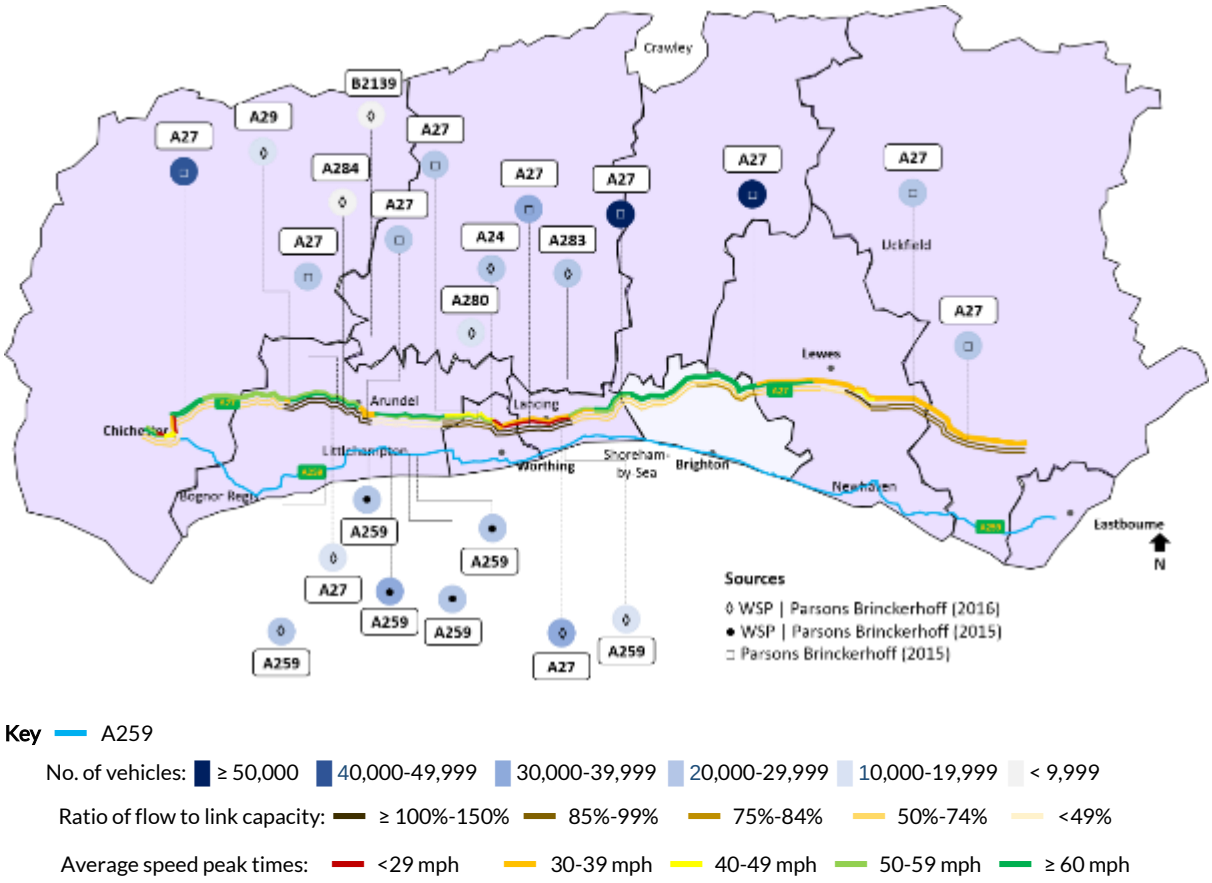
Figure 5-4: Ratio of flow to link capacity



5.30 As can be seen link capacity appears to reach saturation levels at a number of sections including those in vicinity of Arundel, Worthing and Lancing and East of Lewes where delays are likely to occur.

5.31 For completeness, average speeds at peak times have also been overlaid on the average daily weekday flows and the ratio of flow to link capacity map. Figure 5-5 shows average speeds for each direction of travel along the A27 at peak times based also on information available from the A27 Corridor Feasibility Study (Department for Transport, 2015b).

Figure 5-5: Average speed at peak times



5.32 As can be seen from the figure above a number of sections of the A27 appear to experience low levels of operational performance. This map reveals possible issues affecting travel conditions that might include existing bottlenecks along the A27, underperforming junctions, high levels of demand and/or possible supply shortfalls.

5.33 From existing evidence, the road section in the vicinity of Lancing and Worthing appears to carry relatively high flows of traffic and experience low average speeds at peak times. It is thought that the proximity of the A259 and current traffic volumes are very likely to result in significant operational interdependencies between the A27 and A259.

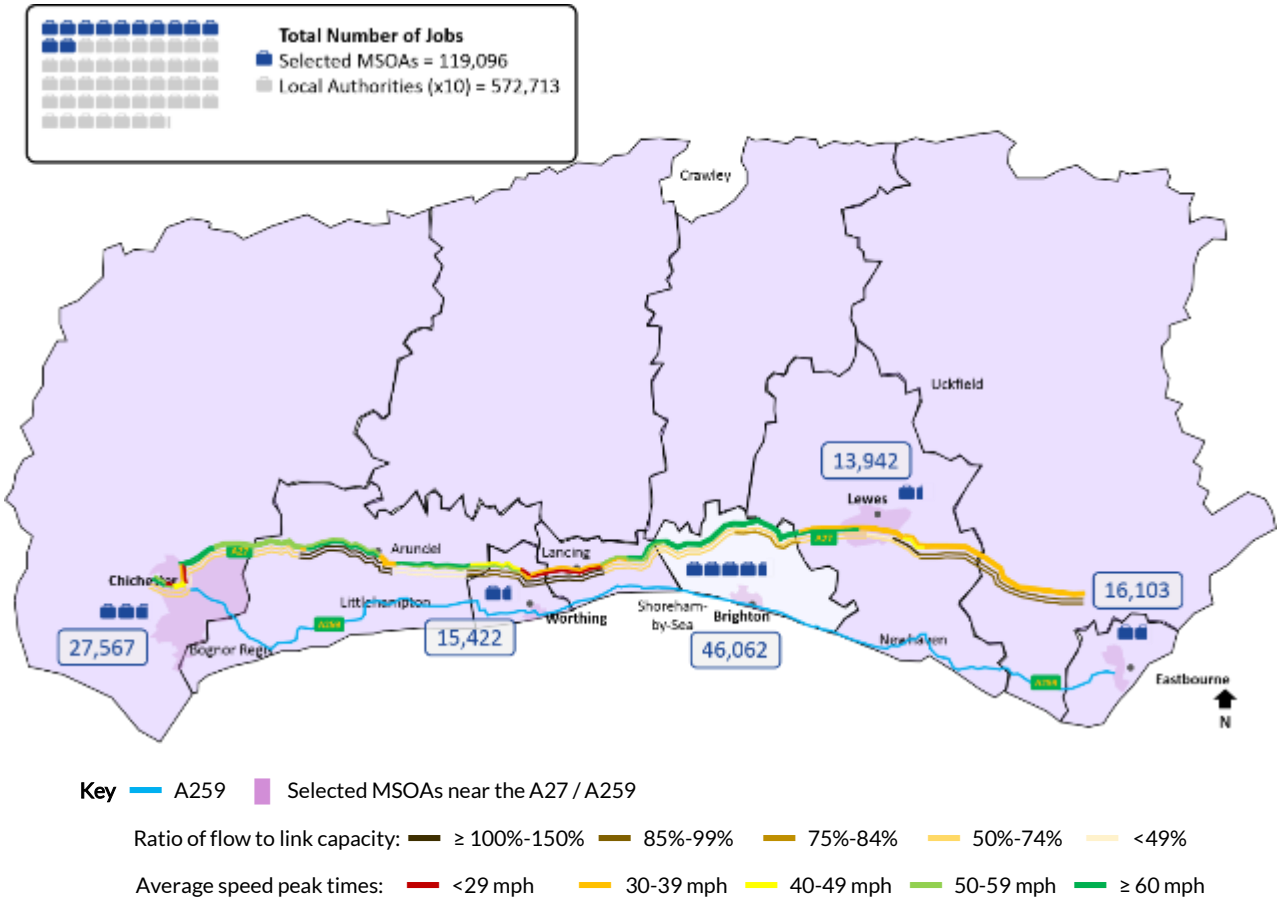
5.34 Anecdotal evidence suggests that there are instances of traffic transfers between the two corridors, particularly when traffic incidents take place.

5.35 Similarly, the A27 around Chichester carries high flows of traffic and appears to experience potential delays that might be connected to junction performances. The A27 east of Lewes also appears to reveal possible operational difficulties that are largely explained (Highways England, 2017a) by means of narrow carriageways, low capacity junctions, slow moving traffic and limited overtaking opportunities.

Employment

5.36 Figure 5-6 depicts the total number of jobs within a selected group of five Middle Super Output Areas[5] (MSOAs) based on 2011 Census data. These results are overlaid on a map showing indicative travel conditions along the A27.

Figure 5-6: Total number of jobs within selected MSOAs (2011)



[5] MSOAs have a minimum size of 5,000 residents and 2,000 households with an average population size of 7,500.

5.37 It should be noted that the number of jobs within the selected MSOAs represent 21% of the total number of jobs across all districts within the study area. These MSOAs were selected as they contain major employment areas in the study area. Actual employment centres or specific locations of these jobs are not displayed.

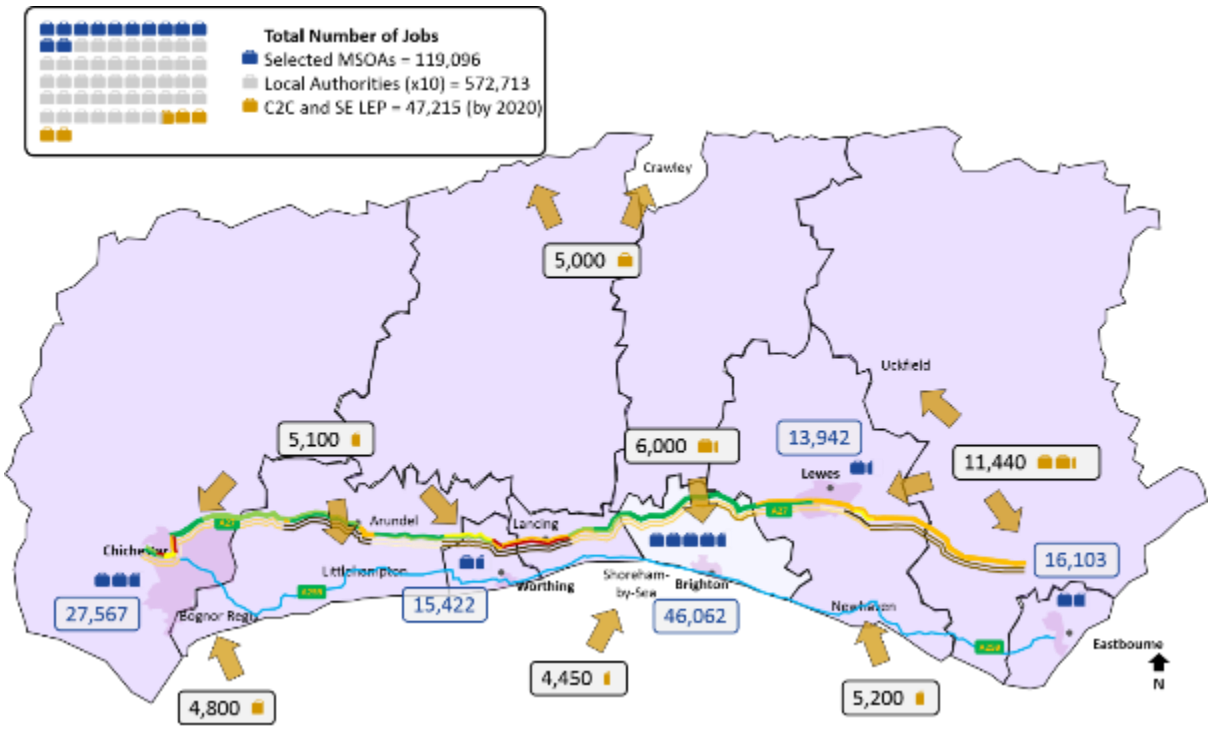
5.38 Although districts-wide, there are major employment centres located in the north of the study area, these were omitted to simplify this high-level analysis. Emphasis was given to major employment centres contained within MSOAs near the A27/A259 corridors.

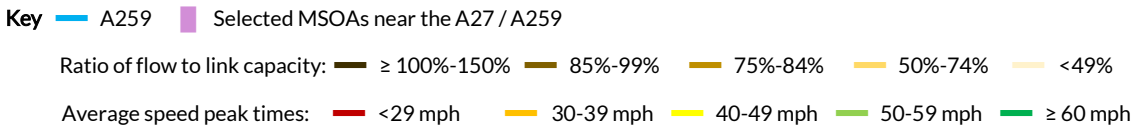
5.39 As can be seen, Brighton features a considerable number of jobs within the study area. Notwithstanding this feature, characteristics of the A27 nearby and sustainable travel might be key to help define a more encouraging picture in relation to commuting travel conditions in and around Brighton & Hove compared to other parts of the study area.

5.40 Conversely, Lewes and Worthing are thought to present specific challenges in relation to offering better sustainable travel conditions in the future. This is likely to be driven by distinctly different considerations within each local context, including constraints linked to SDNP and the specific characteristics of each district.

5.41 Figure 5-7 shows the total number of jobs planned by 2020 based on SEPs (C2CLEP, 2014 & SELEP, 2014). These results are overlaid on the indicative travel conditions map.

Figure 5-7: Planned number of jobs by 2020



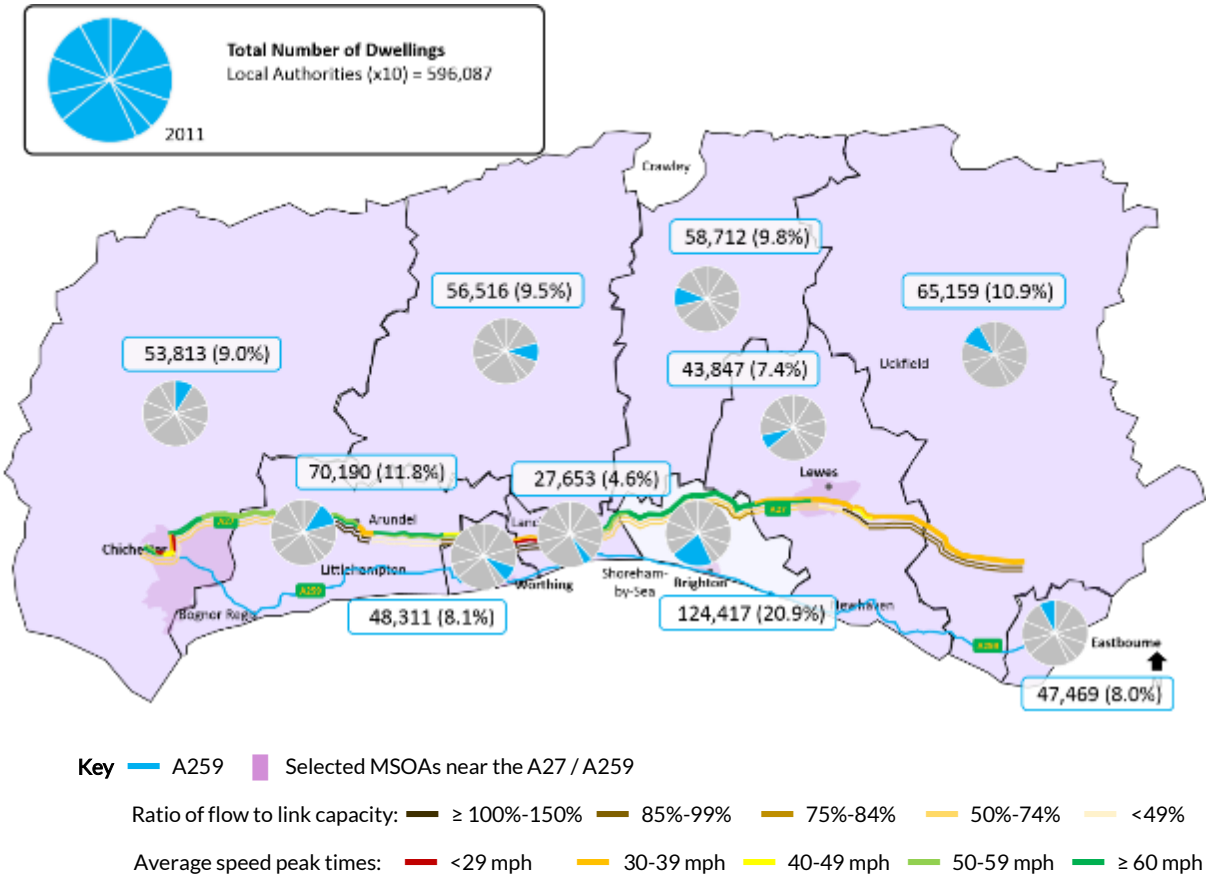


5.42 It should be noted that these planned job figures are thought to carry a great level of uncertainty in relation to deliverability. This is particularly relevant in light of developments regarding the withdrawal of the UK from the European Union.

Housing

5.43 According to 2011 Census data, the total number of residential dwellings within the study area is under 600,000 dwellings. Housing numbers by local authority area are shown within Figure 5-8. These results are also overlaid on a map showing indicative travel conditions along the A27.

Figure 5-8 Housing | Total number of dwellings within the study area

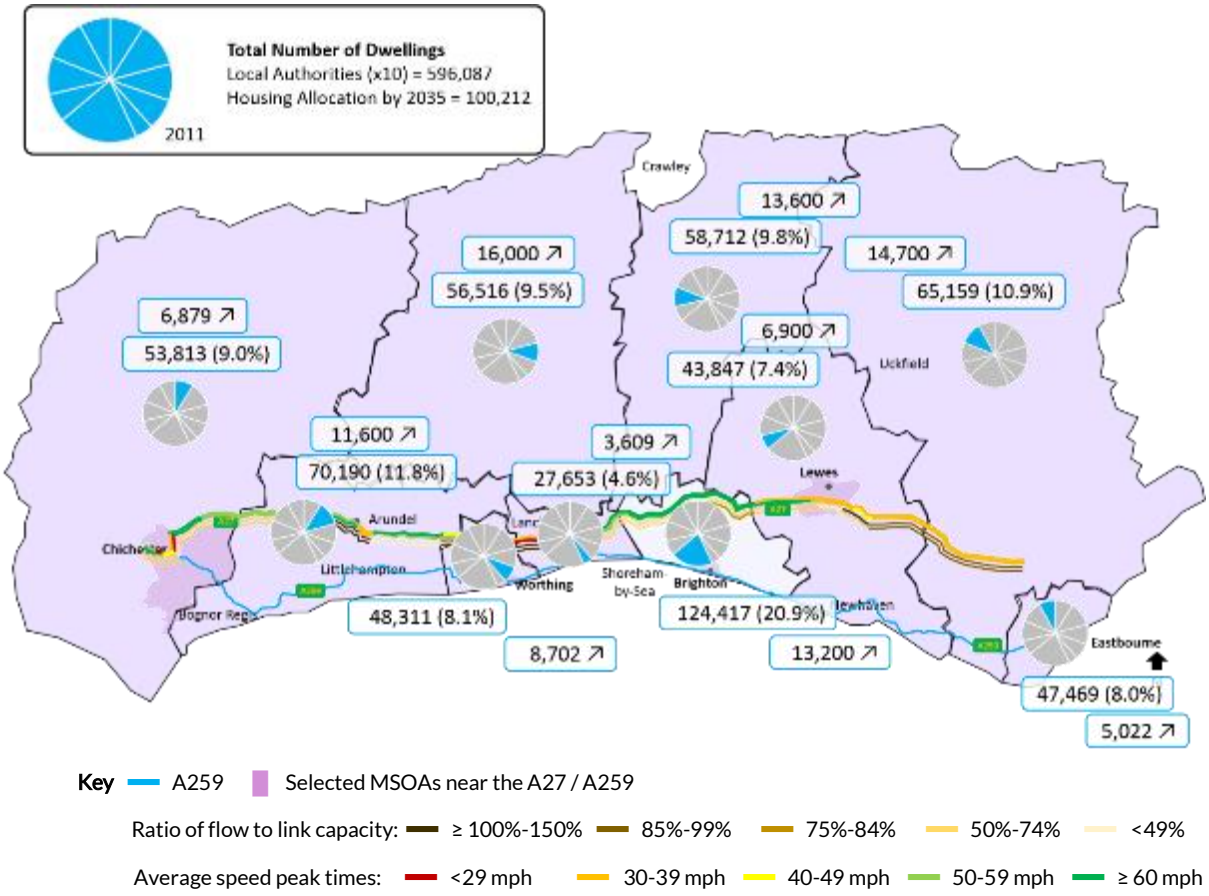


5.44 As can be identified, Brighton & Hove contains over one fifth of the total number of dwellings within the study area. Conversely, Adur District Council has the lowest proportion of dwellings per district with 4.6% of the total number of dwellings.

5.45 In terms of the projected housing allocation by 2035, it is noted that approximately 100,000 dwellings are expected to be provided within the study area. This total was identified based on data available from the latest versions of Local Plans.

5.46 Figure 5-9 displays the planned housing allocation by 2035.

Figure 5-9 Planned housing allocation by 2035



5.47 As can be seen, Horsham, Wealden, Mid Sussex, Brighton & Hove and Arun are the main local authorities expected to provide the greatest number of additional dwellings with individual housing allocations of 16,000, 14,700, 13,600, 13,200 and 11,600 respectively. However, this could be somewhat misleading in terms of transport requirements as some of this development will be quite some distance from the area. This is particularly true for Horsham for example.

5.48 Conversely, the combined housing allocation for Worthing and Adur at 12,311, given the relatively small area of the two councils and their coastal location, could have significant implications for transport along the coast. Significant housing allocations to greenfield and suburban locations, such as identified in Arun's draft local plan, is likely to increase road traffic in comparison to allocations in urban locations closer to services and employment.

Travel Patterns

5.49 As the project team did not have the benefit of detailed information on travel patterns along the A27 corridor, the following considerations rely on data publicly available and focus exclusively on work travel patterns.

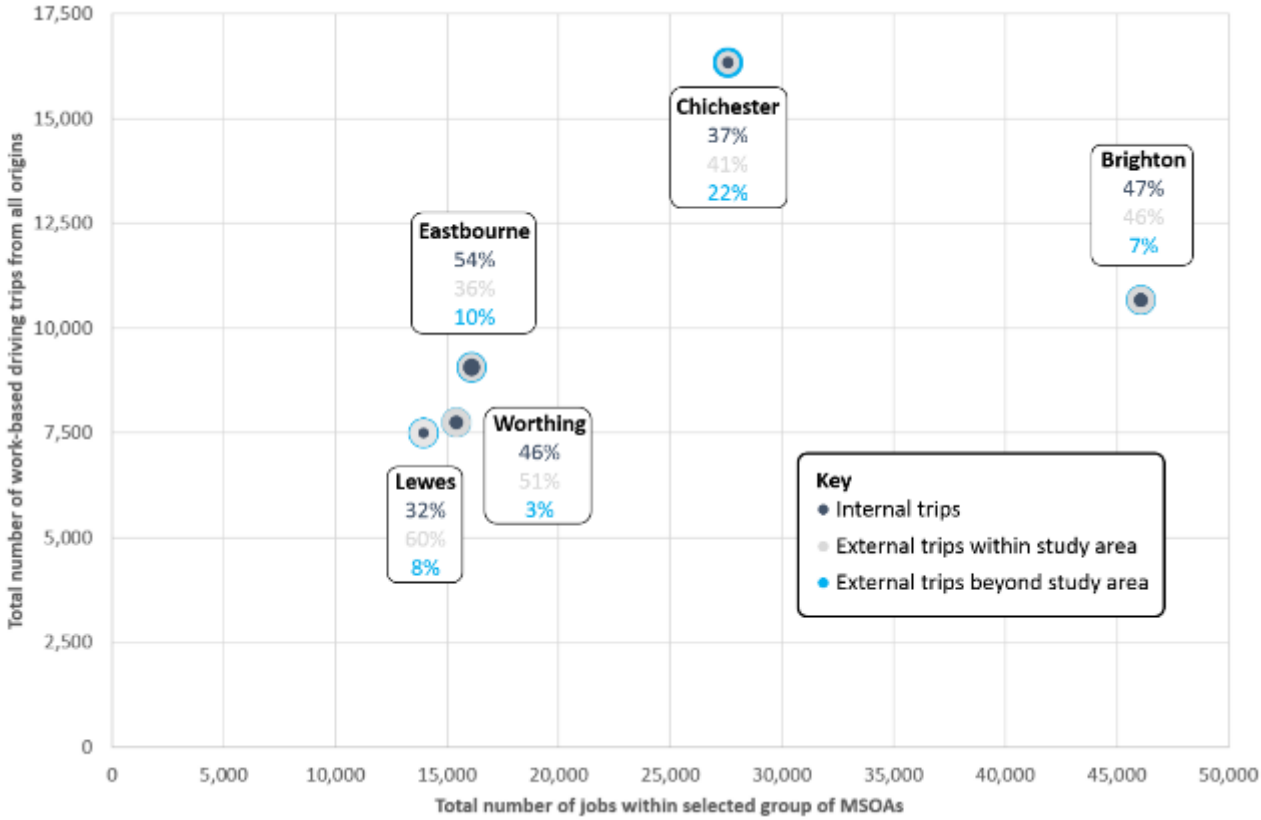
5.50 Indicative travel patterns were identified from the top-10 travel to work flows using 2011 Census data. Figure 5-10 shows the general work-based driving[6] trip patterns for each of the five groups of selected MSOAs near the A27/A259, namely, Chichester, Worthing, Brighton, Lewes and Eastbourne.

5.51 The X axis depicts the total number of jobs within each of the five groups of selected MSOAs near the A27/A259 and the Y axis presents the total number of work-based driving trips from all origins. It should be noted that the size of each of the circles provides an indication of the proportion of:

- Internal trips: Trips with origins within the boundaries of each district where the MSOAs are located.
- External trips within study area: Trips with origins within the boundaries of all districts within the study area except the actual district under consideration.
- External trips beyond study area: Trips with origins beyond the study area.

[6] These include car and van driving trips only.

Figure 5-10 Work-based driving travel pattern overview



5.52 This figure reveals various similarities amongst the groups of MSOAs near Worthing, Lewes and Eastbourne. Similarities are apparent in relation to the total number of jobs and total number of driving trips from all origins. Notwithstanding these similarities, there is a noticeable travel-pattern contrast between Eastbourne and Lewes as the former area displays the highest proportion of internal work-based driving trips (54%), which are expected to cover relatively shorter travel distances, against that noted for Lewes (32%).

5.53 Similarly, Brighton also reveals an important proportion of internal work-based driving trips (47%) that might also be likely to involve relatively short-distance driving trips. Nonetheless, the number of work-based driving trips from all origins is comparatively low taking into consideration the total number of jobs.

5.54 Whereas Brighton contains the greatest number of jobs (46,062 jobs) within the selected group of MSOAs near the A27/A259, it is not noted to display the greatest number of work-based driving trips from all origins within the study area (10,667 trips for Brighton against 16,345 by Chichester). This reveals a potentially more sustainable travel pattern in and around the Brighton area.

5.55 The above finding is demonstrated within Table 5-5.

Table 5-5 Ratio of driving trips per job

Ratio of driving trips per jobs within selected MSOAs				
Chichester	Worthing	Brighton	Lewes	Eastbourne
0.59	0.50	0.23	0.54	0.56

5.56 As can be seen, the Brighton area reveals the lowest ratio of work-based driving trips per job. Conversely, Chichester shows the highest ratio. Overall, all ratios are seen to be equal to or greater than 50% apart from the Brighton area identified as 23%.

5.57 Additionally, the Chichester area is noted to experience the highest number of work-based driving trips from all origins for the five groups of selected MSOAs near the A27/A259. Chichester also reveals the greatest share of external trips beyond the study area (22%) presumably because of proximity to population to the west in Havant, Portsmouth, etc.

6. Uncertainty in the World of Transport

6.1 Transport is in the midst of a revolution of a scale potentially comparable to the construction of the railways and the introduction of the motor car. Technology and data are changing the way transport is provided and used; there is evidence that younger people are less inclined to acquire a driving test and own a car; there is worldwide debate on the issue of Peak Oil and, more recently, Peak Car; there are contradictory views on the relationship between road-building and economic growth; and there are serious discussions within the transport planning industry about the quality of appraisal techniques. All this creates a significant level of uncertainty in which decisions must be made to plan for the future.

6.2 This chapter sets out valuable contributions from academics of the University of the West of England (Bristol) including a summary of recent academic literature relating to the effectiveness or otherwise of road building as a solution to solving the problems of congestion. This focusses on material published largely in the last 10 years, although the observations and uncertainties around the relationship between new roads and congestion relief are well established, most notably through the findings of the 1994 SACTRA report, which established clear evidence between the construction of new roads and the inducement of new traffic.

6.3 The chapter also examines assumptions underlying the A27 Corridor Feasibility Study and considers the need to promote a new approach to transport planning and policy making in the light of the deep uncertainty regarding future societal developments.

The Case for the A27 Highway Improvement Schemes

6.4 There is a long history of studies, strategies and schemes to address the issue of congestion along various sections of the A27 corridor, dating back to the 1990s. This very fact perhaps demonstrates the difficulties of finding affordable and acceptable solutions in an environmentally sensitive area, and therefore the need for an alternative approach.

6.5 Most recently, HE has been developing a set of four highway improvement schemes for the A27 Sussex coastal corridor. The package of schemes is intended to address

congestion and safety problems on the route, while being sensitive to the local environment, and is intended to support growth of jobs and homes as planned in the C2CLEP SELEP Strategic Economic Plans.

6.6 This view is expressed in the Coast to Capital Strategic Economic Plan to 2020/21 (Coast to Capital Local Enterprise Partnership, 2014), which outlines that '… essential underpinning infrastructure - particularly transport and flood defences - are reaching capacity and are no longer robust enough to support future growth - the fragility is beginning to show'. The A27 Corridor Feasibility Study stated that 'In view of current problems of constrained capacity, planned growth in housing and employment, and the limited scope for alternative rail and other solutions to address the current and future problems, there is a need to invest in road-based solutions' (Parsons Brinckerhoff, 2015a).

6.7 The A27 Corridor Feasibility Study also found traffic levels close to or above capacity at single carriageway sections on the A27 at Arundel, Worthing and Lancing and East of Lewes. These were identified to lead to congestion, poor reliability and high accident rates. This study noted that few users of the A27 use it from end to end and that the A27 serves a variety of short and long distance trips. It acknowledged that traffic volumes along the A27 had decreased slightly between 2007 and 2012 but concluded that the current capacity of the A27, and its immediately adjacent road network, and of the public transport system in the coastal corridor will not be able to support economic growth. The study perceived little prospect of an improved public transport offer being provided for journeys along the corridor.

6.8 A 'first principles' spreadsheet model was used in the feasibility study to predict future traffic growth and congestion on the A27 corridor in 2021 and 2031. It showed deteriorating conditions but was not explicit about assumptions made on demand growth. The study stated that a 'more efficient network would enable firms reliant on the A27 for access to operate more efficiently, and encourage investment in existing and new businesses. With greater certainty over journey times, businesses would be better positioned to compete internationally.' More detailed modelling analyses of specific proposals for Arundel, Worthing and Lancing and East of Lewes were conducted and used to assess the VfM of the proposals. Existing transport models were employed to estimate user benefits (from travel time savings and vehicle operating costs) over the standard 60-year appraisal time frame. Accident benefits and wider economic benefits were also estimated with the latter assumed to be a 10% additional benefit over user benefits. The A27 Corridor Feasibility Study produced an investment case for a dual carriageway bypass at Arundel and for online improvements at Worthing and Lancing but not for options East of Lewes.

Assumptions Underlying the A27 Feasibility Study Assessments

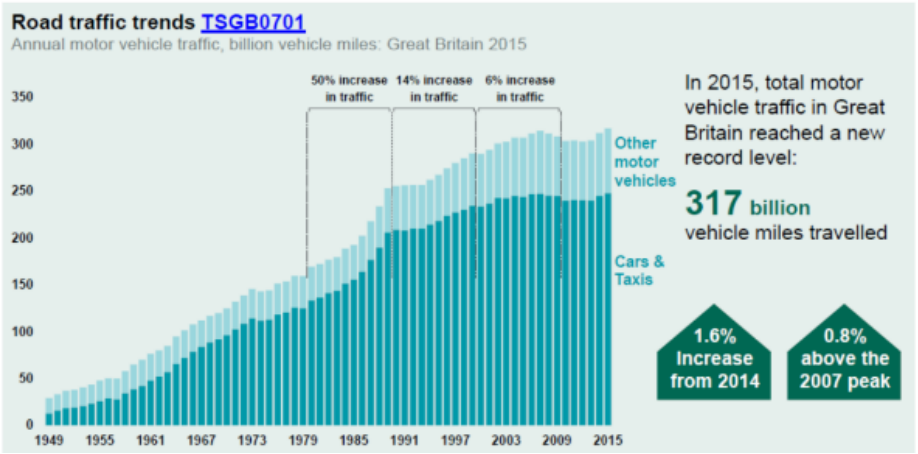
6.9 It is not stated in the A27 Corridor Feasibility Study reports what specific assumptions were made in relation to growth in travel demand and to what extent planned future employment and housing development were taken into account in the calculations of travel demand growth.

6.10 Similarly, there appears to be limited details in relation to how proposed improvements on the A27 are expected to address 'induced traffic'. Generally, induced traffic occurs when a new road is opened or major highway improvements are put in place (e.g. a new bypass, road widening schemes, etc.), resulting in new car trips and reducing the congestion relieving benefits of a scheme.

6.11 Additional car trips can include those trips linked to people who decide to change their routes; switch from more sustainable travel options; or choose to travel more as a result of the new road network conditions. This is a key consideration in the context of the study area, as there seems to be gaps in terms of the long-term impacts and how proposed changes to the road network could encourage sustainable regional and local land-use patterns and help shape more desirable travel behaviours.

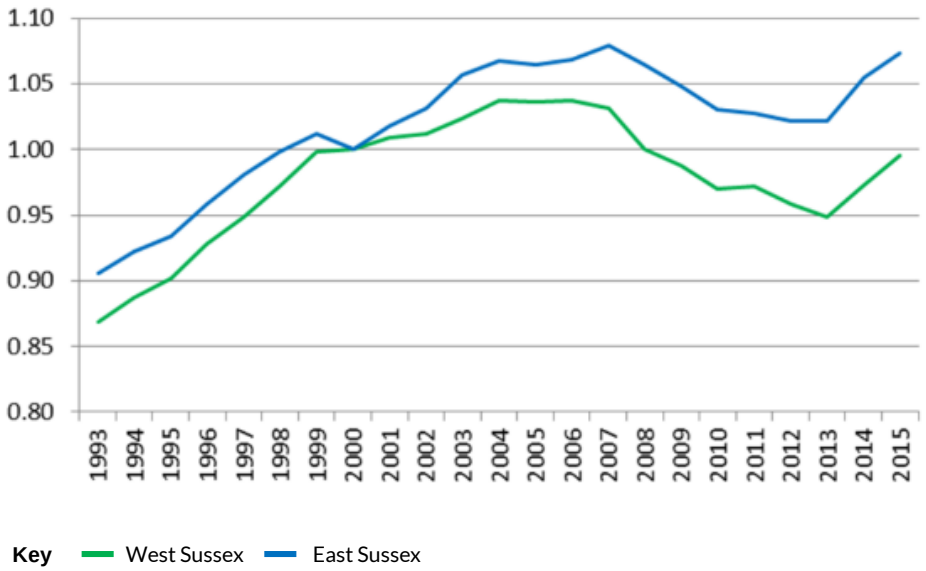
6.12 Traffic levels have not changed significantly at a national level, or in West and East Sussex, since the turn of the millennium. Traffic levels in Great Britain are known to have dropped after the economic crisis in 2007 and were not growing significantly before that. An upward trend is shown since 2013, as shown in Figure 6-1 and Figure 6-2.

Figure 6-1: Road Traffic Trends in Great Britain 1949 – 2015



Source: Department for Transport (2016a)

Figure 6-2: Road Traffic Trends in West and East Sussex 1993 - 2015



Source: Department for Transport (2016b)

6.13 This evidence raises doubts about the certainty of traffic levels growing in the future. The following observations can be made about recent travel trends from the Department for Transport (DfT) (Department for Transport, 2016c):

- The number of trips made per person has fallen by 13% to 2014 since 2002 with fewer trips in particular for commuting, business, visiting friends and shopping.
- While trips per person have reduced by car and walking since 1995/97, they have increased by rail although this is a relatively small amount.
- The average distance travelled per person was stable between 1995/97 and the mid-2000s (after decades of increases) before falling since the mid-2000s. This is attributable to reduced car mileage, which decreased 10% between 2007 and 2014.
- Car travel per person has fallen for men overall since 1995 but been unchanged for women and it has fallen for younger adults and increased for older adults. In 1990, 48% of 17-20 year olds and 75% of 21-29 year olds had a driving licence. However, by 2014, the proportion of 17-20 year olds with a driving licence had dropped to 29%, and the proportion of 21-29 year olds had dropped to 63%.
- The reductions seen in aggregate motor traffic are smaller than that of car travel per person since the population has been growing and commercial traffic has been growing (i.e. light goods vehicle traffic was up 38% between 2000 and 2014, whilst car traffic only increased 4% and heavy goods vehicle traffic decreased 9%) (Department for Transport, 2016d).

6.14 Similarly, the latest road traffic forecasts issued by DfT have a range of forecasts of between 19% and 55% growth from 2010 to 2040 (Department for Transport, 2015c) for different scenarios. These scenarios reflect uncertainty about trip rates, growth in incomes and fuel prices and the effect of rising incomes on car ownership and use. Anticipated population growth appears to be the main driver of expected traffic growth with the scale of growth dependent on income and fuel costs trends. DfT is carrying out a programme of work investigating travel trends to review the assumptions of their forecasts and update forecasts in future.

6.15 The lack of growth in car traffic in the UK, which is also seen in other industrialised countries, has led to the notion of 'peak car'. It has been debated whether the future might see a return to growth in car use, a persistence of current levels of car use or a long-term decline in car use (Goodwin, 2012). DfT has stated that previous over-estimates of road traffic growth it made, can be accounted for by differences in out-turn GDP growth, fuel costs and population than had been assumed and looking ahead it sees the trends in these likely to lead to resumed growth in car traffic. Observed growths in car traffic and motor traffic overall in the three years since 2013 are seen as supporting this argument.

6.16 Supporting the idea of persistence of current levels of car use, Goodwin (2012) refers to work by Schipper and colleagues, which suggests car travel reaching a plateau based on evidence that beyond a certain income being reached people do not travel any further, and work by Metz which suggests people have reached the point where there are diminishing returns of increased travel speeds in terms of any further access to opportunities.

6.17 Goodwin himself points to a turning point in travel per person happening well before the recession around 1992/94 to support the argument that what has occurred is not just a temporary response to economic circumstances but the first phase of a long-term decline in car use. He acknowledges that it cannot yet be identified the extent to which the trend has been influenced by transport policies (e.g. lower levels of road building since the early 1990s) and by secular non-transport factors. He suggests it will be informative to study 'trend-setters' (i.e. who have decreased car travel the most) to see what they might tell us about future trends for the rest of the population. In this vein, it has been argued that a transition may be occurring from car-based mobility towards Information and Communication Technology (ICT)-based activity patterns and accessibility with young people as digital natives in the vanguard of this (Van Wee, 2015; Lyons, 2015).

6.18 Millennials born between 1980 and 1999 have been of particular interest given their car use has been considerably lower than previous age-cohorts and they potentially could

take forward this travel behaviour into later lives. Chatterjee et al. (unpublished) concluded that changes in socio-economic situation (i.e. employment, income) are the most important contributors to the lower car use of millennials and that changes in living situations (e.g. living arrangements, residential location), demographic situations (e.g. delayed partnering and child raising), value orientations (i.e. car as status symbol) and costs of owning and using a car have also played a role. They note there is evidence emerging that millennials continue to have lower car use than predecessor cohorts when they get older and they predict that the next generation of young adults is likely to have a similar level of car use as millennials.

6.19 The lower driving licence holding and car use of the under 30 age group in recent years points to the need to carefully consider the location of future developments such as housing and employment sites and the provision of transport and other access options for them. For example, developments that rely largely on users getting to and from them by car may not meet the needs of future generations and may not succeed economically. This provides a strong argument to consider a wide range of transport interventions and explore mode-shift policy response approaches.

6.20 Subsequently, there would appear to be a strong case to reconsider whether influence can be exerted on the planned developments in the coastal corridor to achieve a balance of housing and employment at individual sites to reduce commuting requirements and for public transport, walking and cycling connections to be further prioritised to reduce the need for car travel on the A27 corridor.

Evidence on Economic Impacts of Road Improvements

6.21 An argument is made in the A27 Corridor Feasibility Study that traffic levels and conditions on the A27 are a barrier to growth for businesses in the coastal corridor and inhibiting their future investment. This argument is backed in the study by results of surveys of businesses in Arundel and of businesses and residents in Eastbourne. Considerable emphasis on transport infrastructure to unlock growth in jobs, homes and employment space is placed in the C2CLEP SEP with transport infrastructure accounting for £303M of the £560M requested from the Local Growth Fund and this being linked to three-quarters of the 60,000 new jobs predicted to be created. The Coast to Capital transport priorities focus on the strategic road network, including the A27 but also include the rail network, other roads (i.e. A259 and A284) and sustainable transport packages in urban areas. For the coastal corridor these include A27 and A259 improvements and access roads to the previously mentioned development sites.

6.22 Notwithstanding these arguments at the local level, the overall impacts of strategic road improvements on traffic levels and economic growth has been the subject of recent interest with the publication of reports in March 2017 by the Campaign for the Protection of Rural England (CPRE) and by HE (Highways England, 2017b).

6.23 The CPRE report (Sloman et al, 2017) drew upon evidence of short-term impacts from over 80 road schemes, published by HE through its Post-Opening Project Evaluation (POPE), and examined traffic generation evidence from 13 trunk road schemes (nine of which were randomly selected from all available POPEs) and found that induced traffic occurred at all but one of them and that pressure has arisen subsequently to expand adjacent road connections. It concluded congestion relief would not be sustained in the long-term as a result of these factors. It examined the economic impact claims of 25 schemes and found evidence for positive impacts was weak or non-existent in 76% of them. It found schemes aimed at stimulating development in struggling areas were slow to achieve this, or it did not happen at all, and if it did occur it was not the type of development that the local economy needed. It also found schemes in 'pressure-cooker' areas aimed at accommodating development led to car-dependent developments that undermined activity in locations where more sustainable transport was available. Schemes aimed at increasing labour catchment areas did not provide credible evidence that they achieved this.

6.24 The HE report (Highways England, 2017b) emphasises the role of the strategic road network in:

- Supporting business productivity and competitiveness, and enabling the performance of strategic road network-reliant sectors.
- Providing efficient routes to global markets through international gateways.
- Stimulating and supporting the sustainable development of homes and employment spaces.

6.25 It refers to underpinning evidence from a series of supporting reports but it does not cite specific examples or demonstrate causality.

Academic literature review

6.26 Our project team's own assessment of the academic literature on transport investment and economic growth is outlined as follows:

6.27 Many studies have found a strong statistical relationship between measures of road infrastructure and/or transport investment and local Gross Domestic Product (GDP) or

local employment. The findings of these studies vary widely depending on the data and the methods used. Most studies find a positive relationship, although some have found negative relationships i.e. more roads are associated with lower GDP (Elburz et al, 2017, Melo et al, 2013 are two meta-studies that summarise these findings).

6.28 There is little doubt that building or expanding roads or railways can cause economic activity to shift from one place to another, although as Goodwin (2003) has shown, employment may shift towards, or away from a new or improved road (the "two-way road" problem). However, the claim that road improvements cause higher GDP or employment has never been proven.

6.29 Areas with more roads generally have higher GDPs and growing economies usually have a growing road network. The main reasons for those relationships are that:

- Growing economies generate more money to pay for more roads; and
- Growing economies, particularly when associated with growing populations, generate more demand for movement, hence more need for transport infrastructure.

6.30 Although the timing may vary, economic growth certainly has caused, and is still causing more road building, for those reasons. Another possible explanation, that more roads cause higher economic growth, is less certain; it needs to be tested. The certainty of the first two explanations and the uncertainty of the third are often overlooked in writings on this subject.

6.31 Some studies have tried to test what causes what by testing what came first; do changes in the economy come before changes in the road network or vice versa? This is known as "Granger causality", which is a misleading term because showing what came first is a necessity but not a sufficient condition for demonstrating causality. The findings from these studies are mixed. Iacono and Levinson (2016) found that changes in highway density were negatively associated with employment in Minnesota. Maparu and Mazumder (2017) found that growth in GDP preceded growth in the road network in India, with no evidence of the opposite effect. Jiwattanakulpaisarn et al. (2009) found different results for different categories of road across the USA. None of these studies is able to prove that road building causes higher GDP. In the UK Laird and Venables (2017) was commissioned by DfT and has been used by public authorities to support arguments about the alleged economic benefits of road schemes. However, a careful reading of that report shows that the authors do not show any evidence, nor make any claims, that road building causes higher national GDP.

6.32 Although more roads are often associated with higher GDP at a local level, there is also evidence of "spillover effects", where more roads in one area are associated with higher GDP or higher employment in that area but also with lower GDP or lower employment in the immediately adjoining areas (US states in Jiwattanakulpaisarn et al, 2009, Californian counties in Boarnet, 1996). Boarnet (1996) found the negative impacts on surrounding counties were larger than the positive impacts on the counties that spend more on roads, suggesting a negative relationship at a State-wide level. The author then cautions against "reading too much into the magnitude of the coefficients", preferring to believe on purely theoretical grounds that the overall state-wide or national relationship is positive. This illustrates a common tendency in this debate; many researchers, as well as politicians and industry lobbyists want to believe that road building is good for the economy. For that reason most writings on this subject should not be taken at face value.

6.33 In fact, it is perfectly plausible to believe that road building expenditure might reduce GDP, because of what is known as "deadweight loss". This is the additional cost imposed on an economy when taxation or public borrowing changes the behaviour of companies or consumers in ways that reduce efficiency. If £1bn is raised through taxation (or through borrowing which raises taxation in future) the cost to the economy as a whole will be greater than £1bn. So whether road building or any form of public spending causes GDP to rise or fall is an empirical question. It cannot be demonstrated by theoretical arguments.

6.34 It is sometimes argued that more roads or wider roads boost the economy because of 'agglomeration effects' – the improvements in productivity that occur when industries cluster together. It is argued that easier road travel expands that clustering effect over a wider area. However, this is a purely theoretical statement; the literature that attempts to measure the relationship has never been able to prove what causes what, for similar reasons to the ones discussed above. The relationship between clustering and productivity is clear, but the causal influence of road building is not (see for example: Graham, 2007). Although the causal factors are clearly complex it should be noted that the region with the highest Gross Value Added (GVA) per person in the UK is London (ONS, 2016), which has the most congested roads; it is also the only region where most journeys are made by public transport, walking or cycling.

Intelligent Mobility

6.35 All transport practitioners agree that transport is rapidly changing, and that seeking to forecast the impact of this change is increasingly difficult. The most dramatic changes are likely to come from the growth of 'intelligent mobility' services (such as mobility as a service) and related big data and technology developments across the transport sector.

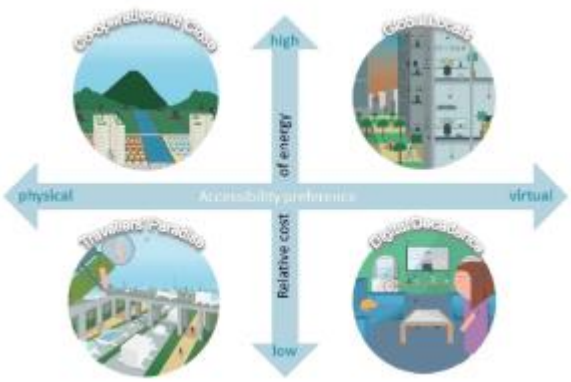
6.36 Disruptive technologies like Uber and Lyft have already had major impacts within a very short space of time, and are predicted to have much wider impacts as they become aligned with investment in autonomous vehicles and alternative power sources. New information services and apps such as Citymapper will provide ever more efficient flows of information to travellers regarding journey options, aligned with smart ticketing technologies which will help to solve the previous challenges associated with integrated journeys.

6.37 Nobody truly knows the impact this will have on the demand for travel across all modes, and hence adds significantly to the uncertainty about the forecasts associated with long term infrastructure investment decisions.

Planning for Uncertainty

6.38 Lyons and Davidson (2016) have proposed a new approach to transport planning and policy making in the light of deep uncertainty regarding future societal developments, which the authors argue prevail at the current time. They characterise the existing approach to transport planning and policy making as 'regime-compliant' and based on assumed certainties such as economic growth that cannot be achieved without road traffic growth. They note that since 2000 economic growth has largely decoupled from traffic growth as economic growth rates have far exceeded traffic growth rates in the UK at the same time as the digital economy has taken off.

6.39 Lyons and Davidson (2016) also suggest transport should be considered as only one part of a 'Triple Access System' involving spatial proximity and digital connectivity, as well as physical mobility. Any of these options or a combination of them can be considered when seeking to achieve beneficial outcomes for society, the economy and the environment. They suggest transport policy makers can shape the future towards desirable outcomes through their decisions, rather than simply predict the future and make decisions to accommodate those futures.



6.40 With deep uncertainty, Lyons and Davidson (2016) suggest a flexible and open approach is required to decision making. They emphasise the importance of embracing uncertainty, for example, by using scenario planning to consider alternative futures.

Conclusion

6.41 The above analysis highlights just some of the uncertainty that prevails at present and which should be considered when developing and delivering a transport strategy. From the evidence reviewed as part of this study, there are some serious concerns regarding the proposed A27 upgrades, including:

- Whether the proposals might worsen congestion due to induced traffic, rather than solve it.
- How robustly the issue of induced traffic has been considered across the whole region, rather than on an individual scheme level as at present, which could significantly underestimate levels of induced traffic and consequently overestimate the predicted benefits of the schemes and their value for money.
- Whether the proposals jeopardise the Councils' own policies on sustainable development, and indeed that of national government, by supporting an ever-growing reliance on car use.
- Whether the proposals may attract development in areas that are inappropriate for it, increasing car-use and congestion and using valuable land in inefficient ways (lower density car borne development).
- Whether the proposals risk creating severance and failing to improve accessibility for all, by reducing investment in some of the most valuable sustainable local transport schemes.

6.42 This alternative transport strategy set out within this report therefore provides preliminary details of different interventions that might potentially contribute towards a proposed alternative vision, taking into consideration uncertainty and the impacts of road building.

7. Views of Stakeholders

7.1 The project team hosted a workshop on the 13th March 2017 to gather the views of various key stakeholders, including members and/or representatives of:

- The Environment Agency.
- Highways England.
- Network Rail.
- SCATE.
- South Downs National Park Authority.
- Sustrans.
- Stagecoach.
- West Sussex County Council.

7.2 The workshop consisted of two parts. The first part sought to stimulate discussions in relation to levels of uncertainty around the future demand for car travel and the possibility of employing different approaches to support a desirable future for the Sussex Coast. Delegates were invited to define a vision for the study area.

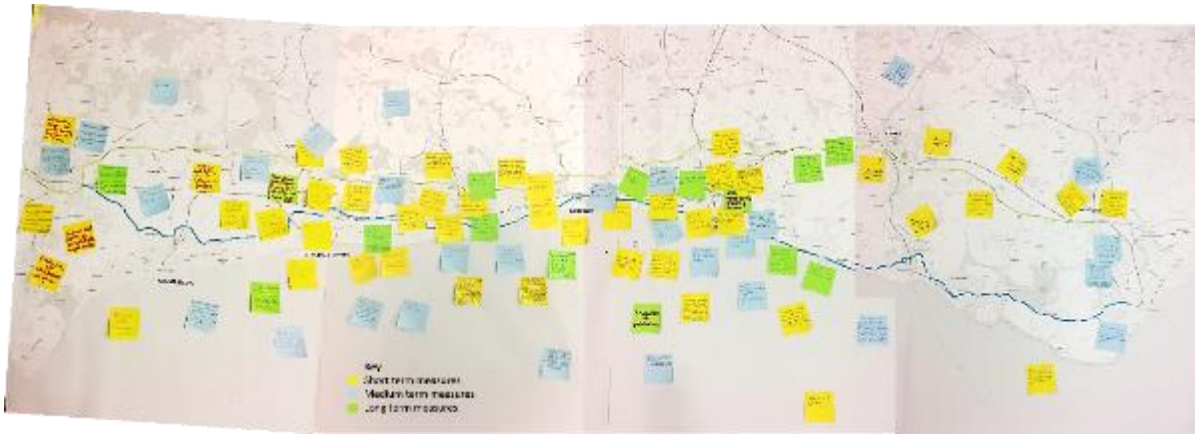
7.3 The second part focused on the presentation of an existing evidence base and the development of possible interventions to be considered as part of an alternative strategy.

7.4 To facilitate discussions throughout the workshop, delegates were divided into four groups. Each group was formed of delegates from different backgrounds and organisations.

Broad Interventions Identified

7.5 Groups were encouraged to discuss the main aspects to be considered in developing a desirable future, including possible objectives, opportunities and barriers. Each group identified what they agreed were the most important.

7.6 Subsequently, each group was asked to place Post-It notes on a large-format map of the study area. These notes detailed possible interventions (short/medium/long term) based on defined visions and consistent with the location of the proposed intervention.



7.7 A full list of possible broad interventions as proposed by the delegates is available within Appendix 4. Alongside the evidence base and case study experience, these have been used to help frame the alternative strategy set out within this report.

8. Current Proposals (Baseline Strategy)

8.1 HE has developed a package of four major road infrastructure schemes on the A27 corridor. These schemes comprise road capacity enhancements and sustainable transport measures. Details of the schemes and associated interventions are given below.

A27 Chichester improvements

8.2 All of the options put forward for Chichester were rejected by the community and led to various groups being set up to represent the views and interests of different geographical areas. Ultimately the improvements were cancelled by the Secretary of State for Transport due to the lack of local consensus.

8.3 Subsequently, under the leadership of WSCC a community group was formed, called BuildABetter A27, which has been meeting regularly since spring 2017 (West Sussex County Council, 2017). The aim of the group is to bring the divided communities together and find consensus solutions. A series of meetings has led to a set of principles being worked up and the group has now invited consultants to tender to put together new proposals with a view to inclusion in RIS2 in 2018. The group expressly wishes to include transport innovations and makes clear mention of an Integrated Transport Plan.

A27 Arundel bypass

8.4 Various options to relieve congestion, improve safety and accommodate growth are currently being considered and public consultation closed on 16 October 2017.

8.5 In line with the A27 Arundel Bypass Public Consultation Brochure (Highways England, 2017b), three options were identified as shown below:

Infrastructure Investment

- Option 1: Improvements at Crossbush Junction to enable the provision of a new dual carriageway, passing to the south of Arundel railway station, joining the existing A27 east of Ford Road. This option would include two new bridges over the existing railway line and over the River Arun respectively. West of an improved signal-controlled Ford Road roundabout, the existing A27 towards Chichester

would be widened to dual carriageway within the SDNP. The existing section of the A27 in vicinity of Arundel railway station (i.e. Station Road) would become a one-way slip road to enable access to the station from the West.

- Option 3: Improvements at Crossbush junction to enable the provision of a new dual carriageway south of the current A27 corridor. This option would also need the implementation of two new bridges over the existing railway line and over the River Arun respectively. From Ford Road, the new route is proposed to bypass Arundel through Tortington Common and the SDNP to re-join the existing A27 at a new junction near Havenwood Park.
- Option 5A: Improvements at Crossbush junction to enable the provision of a new dual carriageway south of the A27 following the same alignment as option 3 between Crossbush junction and Ford Road to continue to the west after Ford Road. This new section is proposed to go through the SDNP and Binsted Village, before re-joining the A27 at a new junction near Yapton Lane.

Road-Based Public Transport

- There are no proposed public transport improvements. The basis to dismiss public transport solutions is stated (Parsons Brinckerhoff, 2015b) as: 'limitations on rail and other public transport modes to significantly improve their offer of alternative choice of travel, other than in the larger urban areas'. Nonetheless, HE (Highways England, 2017c) states that '[HE] would discuss with West Sussex County Council and the public transport operators what further enhancements may be desirable to improve access into the station so that it could function better as a public transport hub for Arundel and as a gateway for visiting the South Downs National Park'.

Pedestrian and Cycle Improvements

- Option 1: Proposed improvements include a footbridge and dedicated walking and cycling crossings at Ford Road roundabout to enable users access/cross to a new walking and cycling path. The new path would also run between the White Swan Pub and the proposed one-way slip road. A shared walking/cycling path would be provided, using half of the existing A27 carriageway up to the Causeway Roundabout, followed by a new walking and cycling path along the bypassed section of the existing A27 from the Causeway Roundabout to Crossbush.
- Option 3: Similar walking and cycling arrangements for links between Crossbush Junction and Ford Roundabout would apply as per option one. However, it should be recognised that the implementation of walking and cycling facilities near Arundel is subject to further discussions with West Sussex County Council. As the existing A27 through Arundel would be downgraded, new walking and cycling paths could be

provided within the current A27 highway limits. Additionally, a footpath and cycleway could be provided along Ford Road. Due to the proposed A27 option alignment, four existing footpaths will need to be diverted between Tortington and Old Scotland Lane. New underbridges and a new 'green bridge' would be considered for Old Scotland Lane bridleway to give walkers, cyclists and horse riders' easy access over the bypass.

- Option 5A: The same arrangements would largely apply between Crossbush and Ford Road as per option 3, including the consideration of a new 'green bridge'. Various footpath/bridleway diversions would be required, including:
  - A diversion between Binsted Lane and Tortington Lane, which will need pedestrians to use a new footway alongside Binsted Lane.
  - A diversion to the south of Tortingon Common/Binsted Woods, which will see a diversion to enable users to share a footbridge over the new bypass.
  - A diversion of the western end of Old Scotland Lane bridleway.

  Additionally, there would be a bridleway link severed where the new bypass joins the existing A27. Consequently, this point would involve a new bridleway link at the new junction near Yapton Lane.

Environmental Impact

It should be noted that HE acknowledges that all three options would have significant impacts on the South Downs National Park and biodiversity and ancient woodland amongst other things and are likely to be contrary to national policy to protect these important natural assets.

A27 Worthing and Lancing Improvements

8.6 The scheme has discounted various options involving separate tunnels beneath Worthing and Lancing and the possibility of online dualling, primarily on cost grounds.

8.7 Public consultation ended on 12 September 2017 on a single option to facilitate future works on detailed designs but has not been very popular locally (BBC News, 2017). This option will improve six junctions on the A27 as shown below.

Infrastructure Investment / Operational Management

- Durrington Hill / Salvington Hill: This intervention would convert the priority junction to a traffic signal controlled cross road junction as well as widening to accommodate a two lane approach.

- Offington Corner Junction roundabout – A24 Findon Road/ Offington Lane: This intervention would convert the existing roundabout to a traffic signal controlled cross road junction as well as widening to accommodate extra slip roads/lanes. Access to the A27 will be restricted from Goodwood Road.
- Grove Lodge Junction: This intervention would widen approaches and circulation lanes to accommodate two lanes of traffic.
- Lyons Farm Retail Part 1 Junction (Sompting Road) and Lyons Farm Retail Part 2 Junction (Lyons Way): This intervention would widen existing junctions to accommodate additional lanes and provide new turning arrangements.
- Busticle Lane / Halewick Lane Junction: This intervention would provide a new junction (partly within the South Downs National Park) to the west of the existing junction for access to / from Halewick Lane.
- Grinstead Lane / Manor Road Junction: This intervention would widen the existing junction approaches and convert the existing roundabout to a new traffic signal controlled junction. It will also impose a u-turning traffic restriction.

Walking and Cycling Changes

8.8 While all new traffic signals are expected to incorporate toucan crossing facilities, a number of the new junctions will become extremely complex and incorporate a large number of stages potentially increasing severance for walking and cycling.

Environmental impact

8.9 It is claimed this could lead to an improvement in air quality, although it is acknowledged that this could be offset by more vehicles using the road. The most significant impact would be the development within the South Downs National Park for the Busticle Lane / Halewick Lane junction improvement.

A27 East of Lewes

8.10 The following interventions are included as detailed by the recent preferred route announcement, A27 East of Lewes, improvement scheme (Highways England, 2017d):

Infrastructure Investment

8.11 Various improvements will be implemented as shown below:

- Drusillas Roundabout Improvements: This intervention is expected to enlarge the existing roundabout, accommodate walking/cycling crossings, upgrade walking/cycling paths plus include a walking, cycling and equestrian crossing.
- Polegate Junction Improvements: Reconfigure existing junction and upgrade to signalised junction to accommodate new lanes to cater for turning movements and walking/cycling facilities. Widen Polegate railway bridge to provide a dual carriageway. Introduction of a new access for existing Polegate maintenance depot and upgrade of Jevington Road priority junction to signalised junction.
- Wilmington Junction upgrade: This intervention will reconfigure the junction layout, incorporating a number of changes to existing driveway accesses and bus stop locations (new bus lay/bys). New road marking will also be added alongside changes to the speed limit and supportive traffic calming measures to facilitate turning movements and enhance road safety.

Pedestrian and Cycle Improvements

8.12 Corridor-wide facilities for walkers, cyclists and other non-car users:

- New walking/cycling path (shared-use path) alongside the A27 between Beddingham and Polegate junction.
- Provision of new walking, cycling and equestrian facilities at specific junctions as detailed above.

9. New Transport Strategy

The Problem to be Solved

9.1 The evidence presented in the earlier chapters of this report highlights the complex nature of the local and strategic travel demands across the study area. Where good quality alternatives to car travel have been provided, then local people have responded by utilising this provision (for example the bus and cycle routes across Brighton), but generally the study area is dominated by provision for the private car (roads and parking), which has influenced travel choice and led to increasing levels of car use. As a result, congestion has worsened, impacting negatively on many aspects of life.

9.2 There is a general consensus amongst transport practitioners that it is simply not possible to 'build our way out of congestion', and there is clear evidence that new roads generate new traffic and therefore undermine projected time savings. There is significant uncertainty around the future forecasting of travel demand which has traditionally underpinned the business case supporting new roads investment, and the rapid development of new technologies look set to influence travel in the future in ways which we cannot possible predict. Young people are increasingly moving away from car ownership and use, and the local and national policies relevant all point to the need for a shift towards more sustainable travel behaviour.

9.3 There are isolated pinch-points where conflicts between longer distance strategic traffic and, more local demand causes a problem, and the schemes being promoted by HE may or may not have some role to play in alleviating these, but given the level of uncertainty about future transport trends, and the uncertainty about the links between transport investment and economic growth, we cannot conclude if this is the case.

9.4 There is therefore an underlying need for a more comprehensive approach to transport strategy for the study area that seeks to influence behaviour and reduce the strategic and local conflicts. The aim should be to meet a much wider set of objectives, some of which will be legally binding (for example air quality), and some which have enormous potential benefits (for example health).

9.5 The problem to be solved is therefore:

How can the SCATE region thrive and flourish in a way which embraces the uncertainty associated with future travel demand forecasts, and

deliver a transport system which is more inclusive, sustainable and economically attractive?

The Proposed Vision

9.6 This New Transport Strategy (NTS) is based on a sustainable approach to transport provision, using the principles of 'vision and validate' (Jones, 2017) rather than 'predict and provide'. It seeks to create a healthier, wealthier, cleaner and more sustainable region and is intended to support the following strategic vision for the sub-region, which was agreed with members of the SCATE network:

'The most desirable UK region, successfully responding to the diverse needs of residents, businesses and visitors alike, featuring high quality standards of living and people-centred solutions that help minimise energy use, promoting a thriving low carbon economy and the natural environment'

9.7 The NTS combines positive measures to encourage more sustainable travel behaviours, alongside demand restraint measures to ensure the right balance of travel choice for the different trips to be made on the network. It is an inclusive strategy that seeks to allow for sustainable economic growth whilst supporting healthy communities.

The Strategy

9.8 The strategy is broken down into seven discrete, but complementary components as follows:

1. **Encourage use of sustainable transport** – covering both infrastructure and revenue programmes. Measures included within this component of the NTS are a package of intensive smarter choices measures (non-infrastructure) and integrating ticketing.
2. **Provision of alternatives to the car** – investment in improved facilities for cyclists (new and upgraded routes), rail and road based public transport enhancements, including service improvements and bus priority schemes to tackle poor journey time reliability whilst maximising the carrying capacity of the network as a whole.
3. **Integrated development planning** – ensuring that unnecessary car trips, particularly those for short local journeys under 5 miles, are appropriately managed, and to create the necessary environment and space for walk, cycle and public transport

trips to flourish. Strong focus on transit orientated development and improved transport and land-use integration.

4. **Demand management** – measures included within this component of the NTS are parking management and pricing schemes. Consideration should also be given to freight route management and information, and the application of improved local traffic management schemes, particularly where these improve the flow of people rather than cars within urban areas.
5. **Support highway network operation** – maximising the carrying capacity of the transport network, through more intelligent and equitable use of highway space and technology. Measures included within this element of the NTS are: highway improvement works, junction specific improvements along the A27, improved junction control/priority and an area-wide speed management plan. In the longer term, consideration should also be given to the application of multi-modal variable message signing across the network, supported by efficient and central control.
6. **Promotion of coordinated strategies** – including the development and promotion of a rail strategy and the development and application of a standard design guide to be applied across the region.
7. **Marketing and communications** – including a proactive media and communications strategy; opening up of transport data feeds; and support for the implementation of a mobility as a service platform.

9.9 The component parts of the NTS are summarised below. Importantly, further work would be required to assess the detail and deliverability of the proposed package, and they are therefore presented as an outline early sifting of options at this stage.

1. Encourage Use of Sustainable Transport

Smarter Choices

9.10 An intensive and effective smarter choices programme has the ability to significantly influence peak hour travel demand, and there is a compelling and strong track record in understanding what works, in what contexts from the DfT funded Sustainable Travel Towns, Local Sustainable Transport Fund (LSTF) and Access Fund programmes, along with the Scottish Governments Smarter Choices Smarter Places programme and many locally funded interventions. National research suggests that such approaches can reduce car based travel demand by 14%-18%, provided it is well targeted, over a sufficient time period, with significant investment, and allied to a package of measures which manage the demand for car use through progressive provision and pricing of car parking. The package should therefore include broad range of interventions covering:

- car sharing - can have a big impact if delivered systematically, and alongside infrastructure that supports multi-occupancy car use (dedicated workplace parking for example). There is significant potential associated with large employment sites. Example of British Gas at Blyth Valley Park shows what can be achieved (reduction of around 70% in single occupancy vehicles at the site).
- workplace travel planning - learning from the most recent lessons of LSTF programmes and targeting investment in long term changes in behaviour at key employment sites would need significant investment in local skills to deliver an effective behaviour change team working with major local employers.
- education travel planning - could sit at the heart of local network improvements, through reducing car use associated with school run. The programme should seek to genuinely learn and adapt to ensure sustainable outcomes are 'locked in'.
- station travel planning - all stations should be audited and assessed to ensure proper provision is provided for sustainable access, and once networks are in place, intensive behaviour change programmes using Personalised Travel Planning (PTP) and other techniques should be deployed in local communities.
- personal travel planning - using proven techniques to influence change at the community level. Ideally scheduled alongside infrastructure changes (such as new bus services), and has the ability to influence all trip types.

9.11 Consideration of these broad range of interventions is expected to help local/regional promoters identify more targeted, small and large interventions to support the vision of the NTS and help influence how people choose to travel in the sub-region encouraging more sustainable and desirable travel behaviours.

Case Study: Personalised Travel Planning and Workplace Travel Plans

Personalised Travel Planning (PTP) seeks to encourage individuals to make more sustainable travel choices, through the provision of information, advice, incentives and motivation to voluntarily walk, cycle and use public transport more often. This cost-effective technique has proven successful at encouraging modal shifts throughout a variety of different settings, with messages being delivered to schools, residential areas, workplaces etc.

The PTP scheme called 'PTP for Cycling' ran across a range of cities including, London, Antwerp and Burgos from 2013 until 2016, encouraging people to cycle rather than drive.

In total, PTP was delivered to over 47,000 participants at workplaces, universities and events. Over a three-year period the project delivered a substantial decrease in car travel

Case Study: Personalised Travel Planning and Workplace Travel Plans (Cont.)

(7,931,000 kilometres after one year) and 1,031 tonne reduction in CO_2 emissions – aiding a reduction in noise and air pollution.

Workplace Travel Plans (WTPs) are a package of measures implemented by employers to encourage car-free access to their sites. A recent report by DfT outlines that successful WTPs include a wide range of measures, which include: Parking restraints, promotion of other transport choices and financial incentives, such as reducing fares on public transport.

The organisation Orange launched one of the most successful workplace travel plans for its Temple Point offices in 2001, following a company relocation of 400 members of staff from offices in suburban to central Bristol. This resulted in restricted parking at Temple Point, leading to the introduction of a points based parking system. Permits were awarded to those based on personal and business needs such as care responsibilities and ease of access to the site by other transport options.

Additionally, those who were not awarded solo parking benefited from increased secure, monitored bicycle facilities and, the option to use the free bus service that provides a link to the other offices in Bristol. This resulted in a mass net reduction in car commuters, from 79 per 100 staff pre WTP implementation to 27 per 100 staff, within three months.

Integrated Ticketing

9.12 Integrated ticketing has an important role to play in improving the interchange experience across different public transport services. It can significantly reduce interchange penalty, and remove the barriers associated with the cost of travel, thus encouraging greater use of public transport. Development and promotion of integrated ticketing across bus and rail operators and existing and planned cycle hubs and other sustainable transport initiatives as deemed necessary.

Case Study: The Key

'The Key' is an electronic smartcard that enables public transport users to travel in and around Brighton & Hove.

Although the card has been available for several years to use on Go-Ahead bus services, it has recently been extended to additional operators, the Big Lemon and Compass, two

Case Study: The Key (Cont.)

smaller bus companies that operate subsidised services in the city. As a result of this scheme, 98% of Brighton's bus passengers are reported to have access to smart ticketing (Transport Focus, 2016).

The smartcard offers city-saver tickets in Brighton & Hove, including neighbouring areas (Shoreham, Falmer and Saltdean) and wider network-saver tickets as far as Tunbridge Wells and Eastbourne. In addition to the benefits of having a better integrated public transport ticketing system, the smartcard also offers a wide range of attractive services and discounts, including the City Car Club and the Amsterdammers Cycle Hire scheme.

The Key is compatible with the PLUSBUS initiative that enables National Rail ticket holders to buy an additional ticket, giving the train traveller unlimited local bus travel on participating operators' services at the start and/or end of the rail journey.

2. Provision of Alternatives to Car

Walking and Cycling Improvements

9.13 Walking and cycling are a key part of the NTS to help reduce car dependency and provide alternatives for residents, commuters and visitors. Interventions recognise the value of developing high-quality active travel infrastructure to incentivise the use of non-motorised transport, particularly for short trips (e.g. work, school trips, etc.). The aim would be to identify and build networks suitable for walking and cycling recognising the differences and the synergies between these two modes.

9.14 International evidence on potential for cycling shows that consistent design standards and coherent joined-up networks are the two most important infrastructure factors (Melia, 2015); as one review highlights it: 'a complete system of bicycling infrastructure may have far more impact than the sum of its parts' (Pucher et al, 2010: S122). This principle has now been recognised in national guidance (Department for Transport, 2017b: 19) but unlike many other European cities, cycle networks in British towns and cities still tend to be fragmented and of variable design quality.

9.15 The aim of the cycling interventions will be to assist with the creation of joined-up high-quality networks, starting with missing links and areas where the Propensity to Cycle tool (University of Cambridge et al, n.d.) initially demonstrates the greatest potential for

new infrastructure to increase levels of cycling. Interventions must address route gaps and substandard cycle facilities contrary to standards set out by the Interim Advice Note 195/16, which is part of the suite of documents that make up the Design Manual for Roads and Bridges that is regularly used for road building. A more strategic approach, based on need and potential, should replace the usual approach of building segments in the easier locations, and thus leaving gaps in between them.

9.16 In order to promote cycling successfully within the sub-region, cycle routes should be preferably constructed from smooth, bound and well-drained surface materials to support comfortable cycling provisions.

9.17 Policy responses at a local level should seek to be in line with a proposed new design guide for active travel and development (See the 'Promotion of Coordinated Strategies' section). Whilst emphasis will be given to active travel, design aspects that have an impact on road-based public transport (e.g. bus operations) must also be considered (Stagecoach, 2017).

9.18 Figure 9-1 shows the indicative location of key cycling interventions.

Figure 9-1: Key cycling interventions

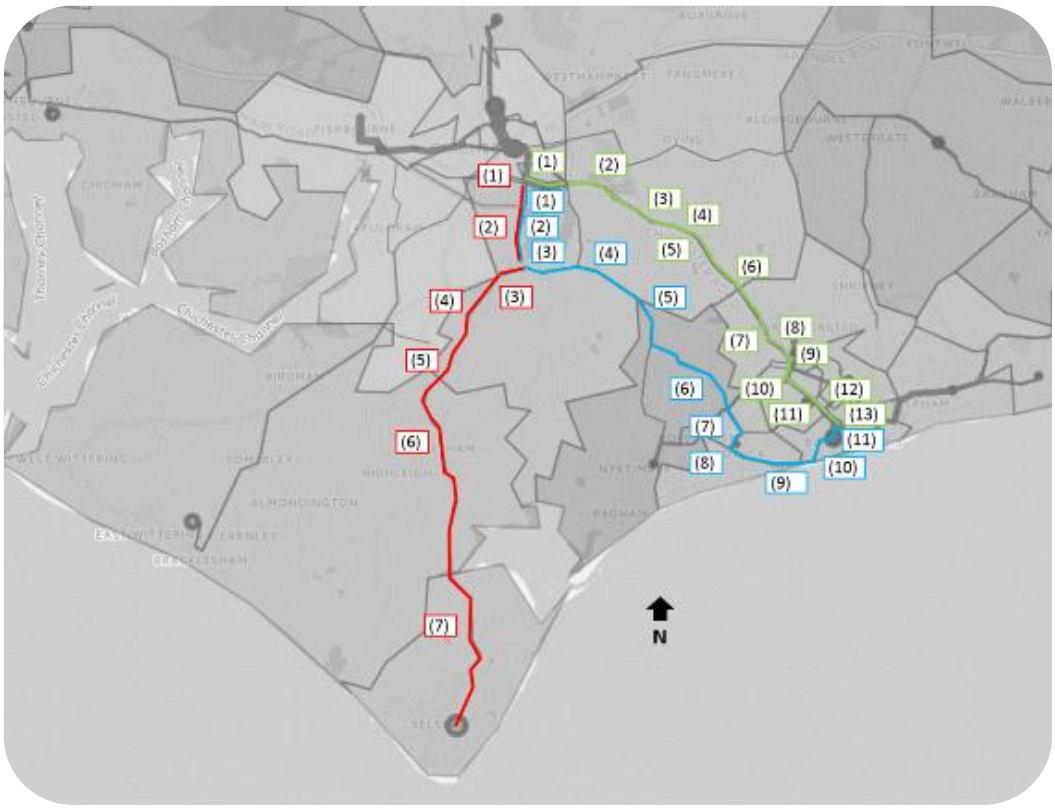
Key A27 ↔ Cycle interventions ● Potential cycle hubs

9.19 Details of the key preliminary interventions are set out based on geographical areas as shown below.

Chichester Area

9.20 Figure 9-2 illustrates various route specific sections along three potential cycle routes near Chichester. For clarity, these three routes are referred to as the red, blue and green routes showing the route specific sections in brackets within individual text boxes.

Figure 9-2: Predefined cycling routes near Chichester.



9.21 Table 9-1 sets out indicative route-based cycling potential (i.e. commuting trips) for a selected number of possible routes using the Propensity to Cycle tool (University of Cambridge et al, 2017). These results are presented using the Census 2011 baseline and the 'Go Dutch' scenario[7] along different route specific sections with a view to exploring cycle commuting potential near Chichester if investment takes place.

9.22 The following three routes were examined:

- Red Route: Chichester – Selsey | Whyke Road/Street End Road/Selsey Road.
- Blue Route: Chichester – Bognor Regis | Lagness Road / Lower Bognor Road.

[7] 'Go Dutch' scenario refers to hypothetical levels of cycle infrastructure and cycling culture comparable to those existing in the Netherlands.

- Green Route: Chichester – Bognor Regis | A259 / Chichester Road.

9.23 It should be noted that change is measured by providing a 'fold increase value' (e.g. 6.5-fold increase on the base value).

Table 9-1: Indicative route-based cycling potential[8] for three selected routes near Chichester.

Origin / Destination	Red Route Chichester-Selsey			Blue Route Chichester-Bognor Regis			Green Route Chichester-Bognor Regis		
	Base[9]	Go Dutch[9]	Change	Base[9]	Go Dutch[9]	Change	Base[9]	Go Dutch[9]	Change
Chichester	(1) 22	(1) 143	6.5 ↗	(1) 22	(1) 143	6.5 ↗	(1) 329	(1) 1,680	5.1 ↗
	(2) 18	(2) 142	7.9 ↗	(2) 18	(2) 142	7.9 ↗	(2) 93	(2) 744	8.0 ↗
	(4) 32	(4) 158	4.9 ↗	(4) 57	(4) 459	8.1 ↗	(3) 93	(3) 744	8.0 ↗
	(5) 23	(5) 135	5.9 ↗	(5) 53	(5) 453	8.5 ↗	(4) 97	(4) 751	7.7 ↗
	(6) 33	(6) 156	4.7 ↗	(6) 27	(6) 199	7.4 ↗	(5) 127	(5) 1,025	8.1 ↗
Selsey	(7) 38	(7) 196	5.2 ↗	(7) 42	(7) 254	6.0 ↗	(6) 127	(6) 1,025	8.1 ↗
				(8) 118	(8) 723	6.1 ↗	(7) 125	(7) 1,015	8.1 ↗
				(9) 94	(9) 506	5.4 ↗	(8) 125	(8) 1,015	8.1 ↗
				(10) 63	(10) 402	6.4 ↗	(9) 212	(9) 1,285	6.1 ↗
Bognor Regis				(11) 409	(11) 2,226	5.4 ↗	(10) 133	(10) 854	6.4 ↗
							(11) 138	(11) 867	6.3 ↗
							(12) 175	(12) 1,011	5.8 ↗

[8] These figures refer to cycle flows. Flows exclude within MSOA travel (Origin and destination within the same zones) and people with no fixed place of work.
[9] Individual route specific sections are shown in brackets.

Origin / Destination	Red Route Chichester-Selsey			Blue Route Chichester-Bognor Regis			Green Route Chichester-Bognor Regis		
Bognor Regis							(13) 266	(13) 1,433	5.4 ↗

Key Route specific sections are shown in brackets

9.24 As can be seen, the greatest increases for the 'Go Dutch' scenario are largely observed on various route specific sections along the Blue and Green Routes between Chichester and Bognor Regis. A number of these increases represent almost an eight-fold increase in cycle use.

9.25 A potential intervention south east of Chichester will entail the implementation of a new cycle superhighway between Chichester and Bognor Regis. Proposed investment seeks to implement approximately 10km of cycle superhighway along the A259 / Chichester Road or Lagness Road / Lower Bognor Road. This intervention would strengthen WSCC plans across the Arundel area to offer more sustainable travel options, particularly current plans to provide a safe and direct walking and cycling route between Bognor Regis and Littlehampton along the A259.

9.26 Improvements for walking and cycling will also be necessary at the A27 and Bognor Road junction or the A27 and Whyke Road junction respectively.

Case Study: Sustainable Transport Corridor

The provision of good quality infrastructure is recognised to encourage modal shifts towards active travel.

The recent implementation of bus and cycle lanes along Lewes Road (A270) in Brighton; the creation of 14 'floating' bus stops; reconfiguration of a signalised junction and upgrades to all traffic signal equipment; and the implementation of new crossing facilities has led to an average 12.7% increase in the number of cyclists compared to 2008-2011 cycle levels, in addition to a reduction of general traffic by approximately 15.0% with evidence of minimal displacement to alternative routes, which is suggested to be within conventional levels of daily variation for traffic flows during peak times.

9.27 This cycle intervention should be strengthened by the provision of two cycle hubs in Chichester and Bognor Regis to encourage residents and commuters to cycle. These

cycle hubs should offer cycle parking spaces, repair and management workshops, showers and lockers, amongst other commercial facilities.

Arundel Area

9.28 Provision of new segregated walking and cycling links between:

- Arundel and Wick/Littlehampton to bring synergies with the proposed north south road link between Littlehampton and the A27 by-passing Lyminster and Wick. This intervention will contribute to improve connectivity to rural areas and cycle route 2, which is part of the National Cycle Network (NCN). It would also improve access to Arundel station, which many people currently drive to in order to commute up to London
- Arundel and Ford Station to better connect Arundel and rural areas with Coastway West services which is well used by commuters and students.

9.29 A cycle/walking hub is proposed at Arundel (i.e. with leisure emphasis, Arundel Park) and a cycle hub at Ford Station (i.e. with commuter emphasis).

Case Study: Cycle Hubs

In 2013, Northern Rail funded the establishment of Leeds CyclePoint, a Cycle Hub located in the heart of Leeds city outside Leeds Station. The scheme offers fully secure, staffed storage for over 300 bicycles at a cost of £1.50 per day, £20 per month or £140 annually. Since its introduction bicycle trips to Leeds station have doubled, highlighting how the provision of good services can instigate modal shifts towards active travel. The implementation of CyclePoint in a central, prime location encourages integrated smarter travel choices, specifically for multimodal journeys.

Cycle Hubs are not only limited to the urban context but have been shown to thrive as a recreational service. Swinley Bike Hub located in the heart of Swinley Forest offers visitors the opportunity to experience the scenic landscape in a different capacity. The service enables visitors to store or purchase bikes enabling nature lovers to explore the area at their own will, providing individuals the flexibility to explore on foot or on wheels, knowing that their bicycle is safe.

Worthing and Lancing Area

9.30 Cycling interventions in this area should focus on high-quality improvements to local cycle routes with a view to favouring short trips, in addition to enabling cycling and

public transport interchanges for much longer trips. The proposed approach is based on potentially shorter distances to access services and activities in this area.

9.31 Better planned and delivered developments and associated developer contributions are expected to play a key role in advancing walking and cycling improvements to build on a cycle hub already in place at Worthing Station. It should be noted that enhanced stations and active travel infrastructure close to key public transport interchanges (e.g. East Worthing and Durrington-on-Sea) are important to support the strategy.

9.32 It is recognised that several sections along the NCN2, including parts of the cycle route near Shoreham, Worthing and between West Worthing and Littlehampton experience route gaps and substandard cycle facilities. Existing cycle infrastructure and conditions are thought to present a major challenge going forward if the intention is to support cycle traffic and the needs of cyclists with a view to encouraging people of all abilities to take on cycling as a viable form of transport across coastal communities and throughout the sub-region.

The wider Brighton and Hove Area

9.33 The proposed strategy requires further examination of opportunities to provide safe, convenient and attractive routes and connections, and eliminate missing walking and cycling links with a view to improving north-south and east-west connectivity and access to and from Brighton and the SDNP. Specific interventions could include:

Shoreham NCN2

- A more direct and coherent route along the A259 to improve connectivity with the Downslink and local destinations. This intervention seeks to address a number of issues currently faced by cyclists in and around Shoreham. Although passage of cyclists through the port and lock gates is permitted, the route bypasses shops and businesses on the A259, where people want to cycle to.

  Additional issues include a narrow cycling provision, 'cyclists dismount' signs and conflict with pedestrians and HGV traffic along the port access road.

Hove

- Some sections of the NCN2 are recognised to be substandard, including the route in the vicinity of the King Alfred leisure centre offering poor transitions, narrow tracks, 90 degree sharp bends and breaks in continuity.

Brighton

- A high-quality cycle link between Victoria Gardens and the seafront (South Coast Promenade, Route 2, which is part of the NCN) in line with existing Brighton & Hove City Council plans to provide a more attractive and enjoyable public space for all.
- High-quality cycle links along the city's main arteries: London Road/Preston Road, Ditchling Road, Dyke Road/Dyke Road Avenue, and Lewes Road and across the A27 into the National Park. All these routes have various levels of cycle provision at present but the quality can be inconsistent and the facilities incomplete or inadequate.
- East of West Street/Brighton Centre, the cycle track is squeezed onto a narrow promenade. This creates problems for walkers and cyclists, as well as bus passengers and crowds near the Palace Pier, where queues for buses are regularly observed.

  Additionally, east of the Palace Pier, organised events in the summer months can often result in route closures that cut off an important connection for business and leisure to the marina and onward to Ovingdean, Rottingdeam, Saltdean and beyond.

9.34 Other opportunities could also be explored east of Brighton where there is scope to help create a better environment for cycling.

Saltdean - Newhaven

- This partial route is noted to be poor and less direct than private motor vehicle routes with cyclists routed through a residential area away from shops and services. There are shared surfaces with regular give ways for driveways and side roads and at least one 90 degree blind bend with 'Cyclists Dismount' signs making the route unappealing.

Ouse Valley

- Better links are required up the Ouse Valley to connect Newhaven and Lewes for leisure and business. Currently, the only options for cyclists are the C7 (west of Ouse) or the A26 (east of Ouse). Both are considered unattractive for cycling due to noticeable speed differentials and the volumes of motorised traffic. Whilst there are plans to link Newhaven with Lewes through the Egret's Way, this project is yet to be completed and its surface variable.

Lewes to Polegate, Eastbourne Area

9.35 In principle, the proposed set of interventions are aligned with HE's proposals. This will provide new facilities or upgrades to existing routes for walking and cycling between Lewes and Polegate, involving:

- A new walking and cycling path along sections of the A27.
- The implementation of 'floating' bus stops as deemed necessary although there are no direct bus service at present between Eastbourne and Lewes using the A27.

9.36 New facilities and upgrades are intended to facilitate a variety of short and long cycling and walking trips east-west and north-south with various combinations in between.

9.37 Additionally, high-quality improvements to the existing network of walking and cycle routes in Eastbourne are necessary to encourage residents and commuters to make more sustainable trips. This approach largely seeks to reduce the number of work-based driving trips, in particular short distance trips while improving connectivity to key cycle routes 21 and 89, which are part of the NCN.

9.38 Proposed interventions need to be integrated at Polegate with planned north-south Hailsham – Eastbourne A22 corridor measures and Cuckoo Trail related journeys, which use part of the NCR cycle route 21 in East Sussex. These measures include: new cycling and walking routes, bus lanes and enhanced bus services. Any increase in capacity on the A27 could reduce their effectiveness.

9.39 Recent investment in signalling systems on the East Coastway railway has improved reliability and created capacity for more trains running parallel to the A27. Future timetabling changes are likely to result in the two car Brighton – Ashford International hourly service being pulled back to operate between Eastbourne and Ashford due to overcrowding. There will be a new four car semi-fast service between Brighton and Hastings giving an overall increase in passenger capacity on this route. Following this change, there will remain more capacity should further services be planned. It should be noted that the line east of Hastings (Ore) is not electrified.

Road-Based Public Transport

9.40 Interventions to encourage the provision of new bus services or increase bus patronage are critical to the NTS. Equally important are the retention and improvement of existing services, particularly for rural areas where there can be few other options. Services need to be frequent, reliable and affordable if they are to attract people onto them. They also

need to span the entire day and not be curtailed in the early evening when people still need to get to work as well as socialising or seeking entertainment.

9.41 New enhanced quality partnership schemes could promote a more coordinated approach towards network planning. This should be supported by taking into account the entire corridor (existing infrastructure and services), major employment areas (particularly to out of town workplaces) and development sites across the sub-region.

9.42 Improved bus punctuality and journey time savings could be achieved through the targeted implementation of bus priority measures. The successful implementation of such measures would help make bus services commercially more viable and include:

- Bus gates.
- Bus lanes, including new bus lanes and bus lane extensions (e.g. extra destinations) and widening.
- Signal modifications.
- Junction improvements.

9.43 Better transport links to new development areas and transport interchanges are intended to support the provision of real alternatives to the car across the sub-region. This could be particularly favourable for younger, older and disabled people.

9.44 Road-based public transport interventions are necessary to support the proposed strategy, with a specific focus on the following aspects:

- Improvements to local bus services and enhanced bus priority in and around various conurbations including Chichester, Worthing and Lancing/Shoreham, Brighton & Hove and Polegate/Eastbourne.
- Development of a 'Smart Bus' service to encourage mode shift for internal work-based trips in and out of Eastbourne. This option would involve the use of existing bus priority measures/the implementation of new measures and opportunities to enhance bus passenger experience, including:
  - Integrated ticketing and smartcards. This could be expanded to enable people to get access to local services (e.g. Library services, leisure centres, cycle hire schemes, local attractions, etc.) as part of a wider strategy.
  - Mobile applications. This could support demand-responsive services, including last-mile services to link new major development areas or rural areas with stations.

- On-board information and services to turn 'dead time' into productive time (e.g. Wi-Fi, USB connections, etc.).

- Long-distance high-quality coach service fully aligned with operations of other bus services including the Coastliner 700. A fast service should consider opportunities to cater for passengers between Chichester and Eastbourne, and be supported by bus priority infrastructure across the entire corridor.

Case Study: Fastway Bus Service

After a long-term decline in patronage across Crawley prior to 2001, the Fastway bus service was implemented between 2003 and 2006 as a series of integrated bus priority measures and improvements around Crawley, Horley and Gatwick in West Sussex.

Key elements of the scheme included the provision of segregated bus lanes and dedicated busway sections with kerb guidance (bus guided system) put in place to help services speed past congestion hotspots; implementation of satellite-based technology to track vehicles and give priority at signal controlled junctions whilst providing real time passenger information.

The scheme also included the adoption of low-floor access vehicles running on low-noise, low-vibration and low-emission engines.

Key performance indicators (KPMG, 2015) for this £38 million bus scheme show a 160% patronage growth over ten years; an estimated 19% reduction in traffic levels between 2006 and 2013 and average reduction of 9.5 minutes of journey times (Including waiting time).

In addition to customer satisfaction levels rising from 91% in 2004 to 96% in 2008, the scheme has proven to also offer great levels of flexibility by facilitating the swift implementation of changes to route 20 following residents' feedback and helping respond to emerging needs and demand growth.

9.45 The Bus Services Act provides a strengthening platform for the progression of improved bus services, and the region can look to Brighton & Hove as a place that has made great progress in encouraging people to make the switch to the bus with some of the highest rates of bus use outside London.

9.46 Brighton's rise in bus use is linked to strong Bus Quality Partnership arrangements put in place, which have resulted in the implementation of bus priority measures including bus priority lanes along key corridors (the A23, A259 and A270); reconfiguration of traffic signals; and the implementation of real time information at bus stops. Brighton & Hove City Council's strong commitment to bus priority and joint work with bus companies

have successfully enabled the adoption of simplified fare structures, multi-operator smart ticketing and investment in new vehicle technology (Begg, 2016).

9.47 Brighton & Hove also introduced in 2015 a Low Emission Zone (LEZ) to promote the adoption of cleaner bus technologies to comply with the Euro 5 emission standard or higher. The timescale for all buses with routes entering the LEZ was defined as 5 years.

9.48 It should be noted that road-based public transport interventions across the sub-region should consider the adoption of new cleaner vehicle technologies, including the potential use of electric fleets. This offers an exceptional opportunity to tackle environmental problems and improve local air quality.

9.49 Responding to the UK's rising greenhouse gas emissions since 2013 and the environmental context of the sub-region, vehicle technology is expected to play a key role in helping minimise the adverse impact on the natural environment. This is an important consideration as the proposed strategy seeks to protect people's health and the natural environment, particularly AQMAs in the Chichester area that include parts of St Pancras and Stockbridge Roundabout; Worthing and Lancing in the vicinity of the Grove Lodge roundabout; Brighton & Hove; and Lewes Town Centre.

Case Study: Bus Technology

Hybrid diesel-electric vehicles are increasingly becoming a popular alternative option in comparison to their diesel counterparts. The hybrid technology has seen considerable technological improvements in recent years, with vehicles now returning 8.5mpg; meaning that over the lifetime of a bus in comparison to Euro V buses, they save an extra 1.5 mpg, delivering significant savings and reductions in CO2 emissions.

Additionally, with recent stop/start technology that hybrid vehicles offer, when the driver brakes, the hybrid system captures the kinetic energy storing this for later – contributing to a more fuel-efficient journey.

The scheme also included the adoption of low-floor access vehicles running on low-noise, low-vibration and low-emission engines.

Key performance indicators (KPMG, 2015) for this £38 million bus scheme show a 160% patronage growth over ten years; an estimated 19% reduction in traffic levels between 2006 and 2013 and average reduction of 9.5 minutes of journey times (Including waiting time).

Case Study: Bus Technology (Cont.)

In addition to customer satisfaction levels rising from 91% in 2004 to 96% in 2008, the scheme has proven to also offer great levels of flexibility by facilitating the swift implementation of changes to route 20 following residents' feedback and helping respond to emerging needs and demand growth.

Rail accessibility

9.50 The coastal railway (Coastway West and Coastway East) serves all major settlements along the Sussex coast, running parallel to the A27. As such, this provides an opportunity for rail to play a more significant role in giving people greater transport choice and an alternative to travelling by car. However, to do so it requires changes to the current services and better integration with other forms of transport.

9.51 Accessibility and rail capacity are currently constrained by slow-speed train services. In many areas, particularly immediately west of Brighton, stations are located less than 1.5 km apart. This provides both an opportunity and a constraint. An opportunity is that the rail system acts like a tram system for many of the coastal communities, but is less clear about its role providing fast, long distance connections.

9.52 A basic problem is identified as one of track capacity and poor timetabling that conspire to allow anything other than a few faster services to operate, with most services being slow stopping services on trains without toilets. Trains without toilets are not a problem for shorter journeys but for the longer journeys this deters people from using the railway.

9.53 A preliminary examination of the current timetable shows how slow services can be and how complex the timetables are. Service improvements and a simplified timetable (short term), combined with the provision of faster services on better rolling stock (long term) would go a long way to making a far more attractive proposition. Other than for more or better rolling stock to increase capacity, the need to invest in infrastructure changes is fairly minimal. Only if faster track speeds and passing places are needed does this become more of an issue.

9.54 It should be noted that any opportunities to further improve rail accessibility through the provision of new stations could be considered in tandem with large development areas or sites (e.g. Tangmere area). Emerging aspirations and the viability of such

opportunities should be reinforced through a locally-promoted rail strategy across the sub-region to facilitate future discussions with Network Rail (see 'Rail Strategy' section).

3. Integrated Development Planning

Transit-Oriented Development

9.55 Rail accessibility enhancements and Transit-Oriented Development (TOD) principles are placed at the centre of the proposed NTS, with a particular focus on increasing the density of development around public transport routes and interchanges.

Case Study: Transit-Oriented Development

Devon County Council (DCC) is recognised for encouraging new developments near existing transport links. This approach to development is largely based on the fact that Exeter is relatively well served by rail with eight well established stations.

Drawing on experience, DCC argues that rail patronage increases with the implementation of new stations and more regular services. Digby & Sowton station opened in 1999 to serve large employment and housing areas nearby. Evidence (Campaign for Better Transport, 2015) shows that: 'passenger numbers increased nearly six-fold between 2003/04 and 2013/14'.

The Council has also been behind the development of four new stations (Cranbrook, Newcourt, Marsh Barton and Edginswell), which would serve major housing and industrial developments. There are longer term plans for the implementation of two extra stations.

Other plans suggest that the Council will use the proceeds of a residential development to re-establish the 'Bere Alston to Tavistock section of the Tavistock-Plymouth railway line allowing the whole line to re-open'. By linking the town to the National Rail Network, this project is reported to have a significant impact on the ability of Tavistock to attract inward investment, economic and employment growth, whilst providing value for money.

The town of Cranbrook has also introduced a new bus link. Post implementation monitoring data revealed a 72% growth in the first year, over previous services, and 31% for the second year. Bus fares have also been able to be reduced by 20%, as fares zones have extended to also cover Cranbrook.

Figure 9-3: Rail accessibility enhancements west of Brighton

Key A27 Scope of rail accessibility enhancements along the Coastway West railway

9.56 As illustrated in Figure 9-3 long-term rail enhancements and TOD-led interventions should initially focus on opportunities in the Worthing and Lancing areas. It is thought that the characteristics of these two areas could help promote the development of urban places that are better designed, bringing people and activities closer to one another whilst encouraging active travel. The long-term aspiration is to provide new semi-fast passenger services to Brighton, Chichester and beyond. This could be achieved by adding strategic passing points, or doubling the tracks as deemed necessary.

9.57 A more extensive provision of semi-fast passenger services between Brighton and Eastbourne and beyond to Ore and Ashford, could also be considered subject to further investigation.

9.58 Enhancements to the Coastway West services need to be coordinated with new housing schemes which need to be fully integrated with rail and other transport modes. This would also benefit existing communities by ensuring:

- Development projects feature mixed land uses.
- Integration of new developments with rail stations, bus hubs and active travel.
- Current services and infrastructure are improved.
- Reduced levels of traffic and congestion.
- Greater health benefits.

Spatial Planning

9.59 Spatial planning principles to reduce travel demands and distances should be strengthened. Future development within the sub-region should be concentrated in locations that are, or can be made to be, well-served by public transport, local services and walking and cycling networks.

9.60 Development densities should be increased around railway stations and major bus nodes in particular. Proposals for new railway stations should be accompanied by plans to substantially increase the density of housing and/or employment around them. Parking in those locations should be minimised and controlled, especially when linked to the provision of car clubs, to support more sustainable access.

9.61 Existing guidance, including the NPPF, which it is understood will shortly be likely strengthened in this respect, already supports such an approach. Future revisions to local plans and local transport plans should make it more specific.

4. Demand Management

9.62 Demand restraint is an important component of the proposed strategy, used to lock-in the benefits of the sustainable transport provision, and positively influence trips in a way that benefits the local environment, economy and the health and well-being of the local population. Whilst the primary emphasis is to influence behaviour of work-based driving trips, other travel patterns will be expected to be influenced by the delivery of supplementary local walking, cycling and public transport interventions.

Parking Strategy

9.63 The development of a coordinated parking strategy across the sub-region should apply to existing streets and new developments. It should prevent pricing competition between regional centres, and provide an appropriate balance, such that short local trips, particularly for the commute, are discouraged by car. For example, Workplace Parking Levy (WPL) schemes could be considered for Chichester, Bognor Regis, Worthing, Lancing, Brighton & Hove and Eastbourne. Importantly, this intervention would require all the revenues raised to be re-invested into transport improvement schemes, ring fencing the funding to improve accessibility for all. Any proposed WPLs should be accompanied by on-street parking controls, to restrain potential overspill parking by commuters.

9.64 This approach could build on the work already done such as WSCC's Roads Space Audits which have been piloted in Chichester and in development for Adur & Worthing and Crawley. These evaluate urban parking and traffic flows with options to release town centre car parking space for housing development close to public transport provision, reducing need for cars and reviving town centre economies.

9.65 Parking standards in new developments need to encourage sustainable transport and discourage short journeys by single occupancy vehicles. The appropriate degree of constraint will depend upon the accessibility of each site to public transport and local services, albeit as a general principle urban parking policy should discourage long stay commuter parking. Higher density sites close to public transport and local services should have the lowest parking standards, accompanied by appropriate parking controls.

9.66 High-quality cycle parking should be provided, particularly, in new developments and key destinations, including town/city centres, stations, bus hubs and other public transport interchanges.

Case Study: Workplace Parking Levy (WPL)

Nottingham's WPL commenced operation in April 2012 and has since showcased multiple benefits that this intervention holds for local people, businesses and the environment (despite the fact that it was initially opposed by businesses).

In its first three years, the scheme raised £25.3 million, which is being invested back into the city to further improve city's transport network. Since 2005, carbon emissions in Nottingham are estimated to have fallen by 33%, of which 13% are thought to be linked to modal shift to public transport and active travel. Recent research suggests that the WPL has significantly contributed towards this overall fall.

Further evidence suggests that investment in public transport is a major factor in attracted inward investment from new businesses, resulting in approximately 2,000 additional new jobs. The scheme costs less than 5% of the WPL revenue to run and is thought to be a key component to reduce the environmental impacts of transport in Nottingham.

Recent evidence (Dale S. et al, 2017) demonstrates a statistical link between the scheme and a reduction in congestion in the city.

Figure 9-4: Workplace Parking Levy & Infrastructure Investment Locations

Key A27 Scope of rail accessibility enhancements along the Coastway West railway Infrastructure investment
Potential workplace parking levy locations

Other Supporting Measures

9.67 To support the 'demand management' workstream, we would propose the following complimentary measures:

- Improvements in Freight Route Management - Improvements have been identified which focus on the development of a freight route management plan, with particular emphasis on Newhaven and Shoreham Port, which should be aligned with Shoreham Harbour Joint Area Action Plan. This would seek to reduce conflict between freight and other vehicles, and remove freight from inappropriate and sensitive locations.
- Local Traffic Management Schemes – schemes that help improve the flow of traffic and prioritise the movement of people, on foot, bike and on bus. These could include red route schemes, junction enhancements, cycle bypasses, bus buildouts, bus gates, advanced stop lines / lane, and signal timing enhancements to meet the needs of key congestion hotspots.

5. Support Highway Network Operation

Highway Improvements

9.68 Accompanying and necessary highway infrastructure interventions have been identified as follows:

- New off-line 1.4km single carriageway link between Crossbush and the existing bridge at the River Arun. This intervention is expected to reduce travel time by bypassing the existing A27, adjacent to Arundel Station, which causes delays to general motorised traffic due to the close proximity of three bottlenecks: Crossbush junction, Causeway roundabout, and the pedestrian lights outside the train station.
- Junction-specific improvements at key junctions East of Lewes in line with HE's proposals with a view to improving motorised traffic turning provisions at Drusillas roundabout, Wilmington junction and Polegate junction.
- Specific junction improvement schemes on the A27 near Chichester (configuration improvements and signal timings) are needed. Improvements would assist with the implementation of bus priority measures to enhance the attractiveness of local bus services.

9.69 These are complementary to the sustainable transport measures, as they are thought to facilitate the safer operation of the A27 along various sections of the corridor; enhance the resilience of the transport infrastructure; and safeguard the SDNPA's statutory purpose: 'to conserve and enhance the natural beauty, wildlife and cultural heritage of the area' (South Downs National Park Authority, 2017).

Speed Management Plan

9.70 The preparation of a speed management plan should seek to support safer and more sustainable travel, covering all modes. This is relevant for the A27 where speed issues remain a concern, but also more importantly on connecting local roads where reducing vehicle speeds will help support the development of a cycling and walking culture.

Case Study: 20's Plenty – Portsmouth

Portsmouth City Council was the first local authority to introduce a virtually city-wide 20mph speed limit using signs alone. The full scheme was implemented between 2006 and 2008 and included 94% of the city's entire road network.

Average speed reductions of 1.3 mph (from 19.8 mph to 18.5 mph) were recorded across 223 sites included within the monitoring programme. An average reduction of 6.3 mph at sites with pre-implementation speeds higher than 24 mph was observed, helping take average speeds at these sites below 20 mph after implementation.

While long-term road safety figures did not result in clear trends attributable to the implementation of the scheme, post implementation figures revealed a short-term reduction of 21% in the number of collisions with the number of casualties falling by 22%.

Other Supporting Measures:

9.71 To support this workstream, we would propose the following complimentary measure:

- Multi-modal variable message signing - to influence travel behaviour along A27, supported by efficient central control. This would seek to offer drivers advice not only on the route ahead but alternative travel options including rail based park and ride along the corridor. Further feasibility work would be required to explore this option alongside work on open data feeds and mobility as a service.

6. Promotion of Coordinated Strategies

Rail Strategy

9.72 A rail strategy across the sub-region, including north-south rail connections should be developed to facilitate the effective promotion of short and long-term rail accessibility enhancements. Proposed rail improvements to provide new semi-fast passenger services to Brighton, Chichester and beyond should be a key focus of the rail strategy.

9.73 Whilst this strategy can be individually championed by local authorities and LEPs, the recent establishment of the regional transport body, Transport for the South East, offers a great opportunity to lead on coordinating a fully integrated rail strategy across the sub-region.

9.74 It is therefore suggested that Transport for the South East acts as a coordinator of this rail strategy with a view to integrating wider transport needs and setting out strategic priorities for investment in the rail network.

Design Guidance

9.75 Development of a 'sub-regional design guide' should be progressed with an emphasis on ensuring all development supports active travel and sustainable transport options. This design guide should set out key design principles to be adopted by new developments and outline consistent technical guidance. It should focus on best practice application of the location and siting of development types, layout of transport systems, prioritisation of walk, cycle and public transport connections, high quality urban realm and placemaking that supports walking and cycling, and a clear transport and placemaking hierarchy (for example, similar to TfL Movement and Place approach to development planning).

9.76 TfL has been at the forefront of a progressive shift in the way streets are designed. This has facilitated the implementation of numerous successful projects across the capital that respond to local needs and those of road users whilst revaluing key priorities and the role of multiple functions of the streets.

9.77 This approach comprises different types of streets and increasingly features streets as places for living (social and cultural function), and promoting healthy street environments with a view of finding the ideal balance between 'movement' and 'place'.

7. Marketing and Communications

9.78 We would propose the following complimentary measures:

- Proactive media and communications strategy – providing a clear and well-structured means of reaching out to the key target audiences across all travel modes.
- Opening up transport data feeds – to enable private sector providers to developer smart ways of packaging transport data and improving the flow of information to the traveller (for example, as per Citymapper in London)
- Support for future 'mobility as a service' platforms – to improve the transparency and payment of different travel options, and to enable a more balanced approach to be taken for each particular journey.

Delivery Mechanisms

Multi-Agency Coordination

9.79 Effective multi-agency coordination is critical for the preparation and promotion of various area-wide strategic actions. These actions could be led by an integrated transport authority with representatives from the East Sussex and West Sussex County Councils and Brighton & Hove City Council in addition to the South Downs National Park Authority and local authority districts.

9.80 Alternatively, it could be progressed through a strong multi-agency partnership approach in which the new regional body for the south east (i.e. Transport for the South East) could play a significant role.

10. Expected Impacts

Evidence Base

10.1 There is a long and well-established evidence base supporting the proposed strategy, providing confidence that effective outcomes can be achieved. A brief history and background of effective sustainable transport delivery is summarised below to provide context to the NTS.

10.2 In 2002 the DfT published one of its earliest formal research papers, setting out the effectiveness of 'workplace travel plans'. This examined the before and after data for 20 case studies, along with depth interviews, and illustrated that across those '20 organisations, on average the proportion of commuter journeys to their sites that were made as a car driver was reduced by at least 18%. This represents impressive achievement'. It also made clear that car park management and pricing was a key element in the most successful travel plans, as was the location and siting of development and employment sites in accessible locations. It helpfully set out clear guidance as to how similar levels of car use reduction could be achieved elsewhere.

10.3 In 2004, the DfT then published a wider research report examining the effectiveness of 'smarter choices measures' more generally covering a range of different intervention types (Cairns, S. et al, 2004). It sought to model the expected impact of smarter choices if they were to be applied intensively over a 10-year period, and concluded that such techniques could:

- Cut urban peak hour traffic by 21%, off-peak by 13%.
- Cut non-urban peak hour traffic by 14%, off-peak by 7%.
- Reduce nationally traffic volumes cut by 11%.

10.4 Importantly the report also made it clear that in order to achieve these outcomes, significant investment at the local level was needed, and the implementation of smarter choices needed to be supported by appropriate demand restraint measures (locking in the benefits).

10.5 Following the 2004 report the DfT took the decision to invest in 3 pilot projects to test whether these expected outcomes could be realised. These projects took place between 2004 and 2008 across Worcester, Peterborough and Darlington, and involved a wide range of measures being intensively applied (approximately £10 per head of population

per year). The pilots were independently evaluated and reported in 2010 (Sloman, L. et al, 2010), and showed that across the 3 towns:

- Car driver: decrease of 9%.
- Bus use: increase of 10%-22%.
- Cycling: increase of 26-30%.
- Walking: increase of 10-13%.

10.6 Importantly the report identified that the out-turn cost benefit ratio of the programmes varied between 4½:1 to 9:1 (depending on whether the wider health benefits were included in the appraisal), and identified some highly relevant wider outcomes (measured through independent data and analysis), in that the programmes:

- Supported economic growth – reduced congestion, improved journey time reliability.
- Reduced carbon – 17,510 tonnes of saving (2008 vs 2004).
- Improved safety – increase in walking/cycling and reduction in associated casualties.
- Improved air quality – not monitored but inferred.
- Improved health – 11% reduction in those who never walked/cycled.
- Promoted equality of opportunity – through improved access to education and employment.
- Improved quality of life – including increased satisfaction with public transport.

10.7 The evaluation concluded by stating 'the current evidence base is sufficient to … justify a substantial expansion of implementation of smarter choice programmes.'

10.8 Hence in 2011 the DfT Launched a £600m programme to support similar projects across the UK, entitled 'Local Sustainable Transport Fund'. This has since been extended, and now continues to operate as the 'Access Fund', and whilst the formal evaluation has yet to formally report, the recent DfT 'What Works' (Hiblin B. et al, 2016) report illustrates that smarter choices interventions continue to be a highly effective way to influence travel behaviour, reduce reliance on the private car, and create more sustainable behaviour.

10.9 A recently published DfT summary report (Department for Transport, 2017c) highlights the impact of the LSTF, detailing the impact of the implementation of various schemes that enabled DfT to achieve key objectives of the funding programme. The report reveals how local economies were supported and carbon emissions fell. It also shows that:

- Relative to a 'comparator group' of local authorities, projects helped reduce car use per capita by 2.3% or 2.6% in large projects.
- Many projects included the implementation of specific measures to reduce car commuting with car driving falling by 2.2 percentage points, equivalent to a 4.1% reduction in car driver commuting relative to the 'comparator group'.
- Promoted cycling by increasing the proportion of adults who cycle by 2.8% or 6.6 percentage points relative to falls reported in comparator areas.

10.10 Notably, in recent years we have also seen other agencies advocating the promotion of walking and cycling as key transport interventions. These include:

- NICE: Public Health Guideline 41: Walking and Cycling.
- Department for Health: Active Travel Strategy.
- Department for Transport: Economic case for active travel: the health benefits.
- Sport England: Active Design Guidance.
- DCLG: National Planning Policy Framework.

10.11 The evidence base has also grown significantly with Sustrans, Living Streets, Liftshare, CfBT, Greener Journeys and others illustrating examples of highly effective interventions. Similar positive outcomes have also been found through large-scale programmes delivered across Scotland (Smarter Choices Smarter Places, 2011) and when examining individual interventions. For example, DfT Making PTP Work illustrated that household based personal travel planning typically reduced car use by around 9% across area-wide communities.

10.12 All of this experience helps to provide confidence that an alternative strategy is both deliverable and can be highly effective in supporting economic growth in a highly sustainable and healthy way.

Expected Impacts of NTS

10.13 Table 10-1 summarises the interventions which form the basis of the NTS, along with the timescales for implementation and expected levels of impact based on local conditions and experience from elsewhere.

Table 10-1: New Transport Strategy Interventions

Description (Type of Intervention)	Delivery Timescale[10]	Expected Impact[11]
1. Encourage Use of Sustainable Transport		
Intensive programme of smarter choices covering car sharing, workplace travel planning, education travel planning, station travel planning and Personal Travel Planning (PTP).	Short-term	High
Integrated ticketing improving the interchange experience across different public transport services.	Long-term	High
2. Provision of Alternatives to Car		
Implementation of high-quality cycle links, initially focussed on Chichester and Bognor Regis; the Arundel area; Worthing and Lancing; Brighton and Hove Area; and the A27 corridor between Lewes and Polegate.	Short-term	Medium
Improvements to local bus services including coach provision, and enhanced bus priority to improve journey time reliability for local PT services. Improvements would consider the adoption of new cleaner vehicle technologies.	Short-term	Medium
Rail enhancements including service improvements and simplified timetables.	Short-term	Medium

[10] Short term is likely to be 0-3 years for delivery, Long term is likely to be 4-7 years for delivery
[11] Scale estimated as follows (as a proxy for congestion relief):
High = 8% to 10% reduction in car trips (and corresponding increase in sustainable travel)
Medium = 4% to 7% reduction in car trips (and corresponding increase in sustainable travel)
Low = 0% to 3% reduction in car trips (and corresponding increase in sustainable travel)

Description (Type of Intervention)	Delivery Timescale[10]	Expected Impact[11]
Rail enhancements including new semi-fast passenger services to Brighton, Chichester and beyond.	Long-term	High
3. Integrated Development Planning		
Transit Oriented Development, initially focused on opportunities in the Worthing and Lancing areas.	Long-term	High
Improved integration between land-use and transport planning to reduce travel demands and distances	Short-term	High
4. Demand Management		
Development of a coordinated parking strategy, which supports more sustainable travel choices and prioritises town centre parking as short stay provision. The strategy would improve parking standards and promote high-quality cycle parking in new developments and key destination.	Short-term	High
Development of a specific workplace parking strategy, which could include the development of Workplace Parking Levies for Chichester, Bognor Regis, Worthing, Lancing, Brighton & Hove and Eastbourne. Revenues to be re-invested and ring fenced for sustainable transport and improved accessibility.	Long-term	High

Description (Type of Intervention)	Delivery Timescale[10]	Expected Impact[11]
Other supporting measures to be considered: **Improvements in freight route management and information** with particular emphasis on Newhaven and Shoreham Port. **Local traffic management schemes** to help improve the flow of traffic and prioritise the movement of people, on foot, bike and on bus.	Long-term Short-term	High Medium
5. Support Highway Network Operation		
Highway improvements at key sections on A27, including a new off-line 1.4km single carriageway link between Crossbush and the River Arun, junction-specific improvements at key junctions East of Lewes and specific junction improvement schemes on the A27 near Chichester.	Long-term	Low
Speed management plan, providing safer local streets for walking and cycling.	Short-term	Medium
Other supporting measures to be considered: **Multi-modal variable message signing** to influence travel behaviour along A27, supported by efficient central control	Long-term	Medium
6. Promotion of Coordinated Strategies		
Rail strategy across the sub-region to facilitate the effective promotion of short and long-term rail accessibility enhancements.	Short-term	Low
Sub-regional design guide with emphasis on active travel and sustainable development, ensuring all development support active travel and sustainable transport options.	Short-term	Low

Description (Type of Intervention)	Delivery Timescale[10]	Expected Impact[11]
7. Marketing and Communications		
Complimentary measures to be considered:		
• **Proactive media and communications strategy.**	Short-term	Medium
• **Opening up of transport data feeds.**	Short-term	Medium
• **Support for implementation of mobility as a service**.	Long-term	High

10.14 Whilst it is particularly challenging to model the predicted impact of the full package of interventions within the scope of this study, we have taken account of experience and evidence from elsewhere when assessing the likely contribution that each element of the strategy will make towards the goal of relieving congestion and reducing the negative impacts associated with continued car use. Table 10-1 shows that each of the interventions has the potential to reduce levels of car use.

10.15 Notwithstanding potential reductions on an intervention-by-intervention basis, evidence from academic studies (Cairns, S. et. al, 2004) indicates that the cumulative effect of combining interventions into a coherent (more extensive) package is likely to be more significant than the impact of individual interventions in isolation. The key consideration of this research alludes to the potential benefits of promoting smarter choices alongside local action measures that can include 'improvements to public transport and walking facilities, parking restraint, reallocation of road capacity, road user charging, highway and traffic control improvements, and land use policies.'

10.16 Whilst up-to-date empirical evidence for quantifying future traffic levels across the study area is limited, we might therefore expect the impact of the full package to reduce the levels of car use above 10% if the components proposed by the NTS are coherently implemented. Similarly, and based on experience from elsewhere, a full package could have an out-turn benefit to cost ratio of 5:1 to 9:1. Indeed this may well turn out to be a pessimistic estimate, given the forthcoming DfT revised Webtag appraisal guidance, which places a higher value on the health benefits of walking and cycling, and removes the decay factor (the example provided by DfT suggest benefits might be 4x higher than previously estimated). We believe the NTS offers a transformative proposition to

support the long-term vision for the sub-region helping break the undesirable cycle of continual road expansion.

11. Conclusions

11.1 The A27 highway improvement schemes have been developed by HE with a view to addressing congestion and safety problems along the A27 corridor and are intended to support employment and housing needs within the study area.

11.2 In light of the cancellation of one of four of HE's schemes, concerns might be raised as to whether the full implications of this cancellation to the wider region and the A27 corridor will have been considered. It is recognised that a fragmented approach to transport provision along the Sussex coast will undermine the success of a coherent strategy.

11.3 A co-ordinated approach does not appear to be a distinctive feature across the study area. In addition, Brighton & Hove experiences contrasting travel conditions, perhaps driven by a different age-distribution pattern (See Figure 5-1) as well as better public transport provision.

11.4 Uncertainty over future travel trends suggests that the estimated benefits of the A27 highway improvements are highly uncertain. Emerging evidence also suggests that there is a strong argument to: (i) consider the potential reduction of travel times through the realignment of a single carriageway section to mitigate traffic delays (as opposed to road widening schemes, resulting in induced traffic) combined with a wider range of transport interventions; and (ii) explore mode-shift policy response approaches in order to address long-term challenges. Such approaches have the capability to support strong economic growth, whilst creating healthier, wealthier, cleaner, more inclusive, sustainable and resilient communities.

11.5 There is growing evidence (Melia, 2015; Sloman et al 2017) that increasing road capacity does not successfully relieve congestion in the long-term, and similarly fails to meet universal criteria for reducing greenhouse gas emissions. This consideration appears to be overlooked by the existing economic plans and requires particular attention in the context of climate change.

11.6 The Committee on Climate Change (2017) recently indicated that despite transport being the largest emitting sector (i.e. 26% of the UK greenhouse gas emissions in 2016) offering significant opportunities to reduce emissions, the majority of the decline in the UK comes from the reduction in the use of coal for power generation.

11.7 There is therefore an increasing need for stronger transport policies over the longer term, especially as: 'transport emissions have risen [for] three years in a row to their highest level since 2009'.

11.8 Similarly, air quality is also a major area of concern. In the Global Urban Ambient Air Pollution Database (update 2016), the World Health Organisation (2016) revealed that 44 cities out of 50 UK cities, which are included in the database, are reported to measure dangerous levels of annual mean concentrations of particulate matter of less than 2.5 microns of diameter (PM2.5). Cities that recorded dangerous levels of exposure include Brighton and Eastbourne with annual means of 11 and 15 $\mu g/m^3$ respectively.

11.9 Linked to future travel trends there is also uncertainty over whether planned employment/housing developments identified in the region's strategic economic plans will proceed (e.g. Major developments located near the A27 such as Bognor Regis Enterprise Zone, Shoreham Harbour and Airport and Newhaven Enterprise Zone). If major developments go ahead as currently envisaged, they may well fulfil predicted traffic growth on the A27, but it is also highly likely that they will induce additional traffic, which will result in an ever-increasing cycle of congestion with business activity hampered as a result.

11.10 As discussed in this report, the current road building programme, particularly when public transport alternatives are assumed unviable, is likely to lead to increases in traffic in surrounding towns and villages as more people are encouraged to drive more often (induced traffic). This is expected to reduce the apparent benefits from any new road construction and will also undermine the ability of alternative transport initiatives, making public transport less attractive and more costly, which could lead to greater demand for subsidies. This will likely fuel traffic growth and result in even more congestion and pollution.

11.11 Strategic economic plans of the two LEPs appear to rely largely on visions of economic development that are dependent on the provision of infrastructure, which includes road expansion. This consideration presents major challenges, as road expansion and environmental objectives related to the SDNP and the preservation of the local environment, which are largely echoed by local plans, do not sit comfortably alongside one another.

11.12 Additionally, the appropriateness of continual indefinite growth as a driving force to development comes with a high degree of uncertainty relative to the recent developments concerning the future of the UK and the European Union relationship.

11.13 Whilst there are some sustainable transport measures that sit within HE's proposals, there appears to be a strong case to reconsider whether influence can be exerted on the planned developments in the coastal corridor to achieve a balance of housing and employment at individual sites to reduce commuting requirements and whether public transport, walking and cycling connections can be prioritised to reduce the need for car travel within the sub-region and on the A27 corridor. This is particularly desirable in a sub-region that is geographically dominated by the sea and the SDNP.

11.14 This report has produced a new transport strategy based on a vision for the sub-region that seeks to feature 'high-quality standards of living and people-centred solutions that help minimise energy use'. The new transport strategy consists of a package of interventions that seek to: encourage use of sustainable transport; provision of alternatives to car; integrated development planning; demand management; support highway network operation; promotion of coordinated strategies; and marketing and communications. The strategy is evidence based and deliverable, and accords with stakeholder views expressed in the development of the strategy. It is also entirely consistent with national and local policy.

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Appendix 1

Main Details of Local Plans

A New Transport Vision for the Sussex Coast - New Transport Strategy Report

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
Adur District Council	• To deliver a minimum of 3,609 dwellings up to 2031 • To ensure local communities benefit from regeneration and to enhance the streetscene • To promote a range of employment opportunities • To ensure timely delivery of infrastructure • To add to natural capital • To protect and improve the setting and character of key areas/assets • To improve connectivity • To work with HE and WSCC to manage/reduce congestion • To ensure that risks associated with flooding are avoided/mitigated • To ensure the use of sustainable construction and design measures	5,820 dwellings Housing allocation: 3,609 (2011-2031)	• Adur's economy is closely related to those of Brighton & Hove and Worthing • Just under 44% of working residents in Adur actually work within Adur district • Between 2010 and 2011 there was net daily out commuting of 1,294 people from the district to Worthing and 3,538 to Brighton & Hove, reflecting the area's close proximity to larger employment centres • Job densities in the district are low - as of 2012, Adur had a job density of 0.63 (a ratio of jobs to population of working age) which is significantly below the national figure of 0.81 • The public services sector provides the largest number of jobs in Adur (24% of jobs). This includes local government, education, health, defence and policing. Other large sectors in Adur, in terms of total employment, include wholesale and retail (22%), financial and other business services (17%), and manufacturing (13%).	1991: 57,618 2011: 61,334 2013: 62,500 (ONS mid-2013 population estimate) - 29% of the population is over 60 years old.

Arun District Council	• To strengthen economic base and provide local job opportunities • To reduce the need to travel and promote sustainable transport • To plan for climate change • To plan and deliver a range of housing mix and types • To protect and enhance Arun's outstanding landscape, countryside, coastline, historic, built and archaeological environment • To create vibrant, attractive, safe and accessible towns and villages • To promote strong, well-integrated and cohesive communities	11,000-13,000 dwellings Housing allocation: 11,600 (2011-2031)	• Almost 5,500 VAT registered businesses • Nearly 50,000 people working in Arun of whom over 11,800 are self-employed who live in Arun • About 72,000 of Arun residents are of working age of which, 64,000 are in work • The competitiveness of Arun's economy is described to perform relatively weakly overall, particularly in relation to skills and enterprise • Arun's Economic Strategy identifies six strategic objectives to (1) improve education, skills and employability of the local population (2) increase business competitiveness and growth (3) encourage the level and rate of new investment, particularly in high growth sectors (4) maintain and improve business infrastructure (5) maintain and improve the area's infrastructure, facilities and physical environment; and (6) maintain and improve transport networks	• Arun has one of the UK's highest populations of elderly people, with 27% of residents aged 65 and over, compared to 17% nationally. Particularly high proportions of elderly people are found along the coast, in the Pagham Aldwick area west of Bognor Regis, and from Rustington to Ferring, where in some wards over 50% of residents are aged 65 and over. • By contrast, parts of Bognor Regis and Littlehampton have a significantly younger population, with above average proportions of families and young people. • Both national and local forecasts indicate that the largest growth in the future will be in

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
				people aged 85 and over. • Since 2004, the population has become more diverse, with people from other European Union countries now making up approximately 5% of the population.

Chichester City Council	• Economy • Housing and Neighbourhoods • Environment • Health and Well-being • Strategic Infrastructure	11,000-13,000 dwellings Housing allocation: 6,879 (2029)	• Identified potential growth in the District's labour force of around 3,200 over the period 2011-29, which is based on the housing provision set out in this Plan. This translates into an overall requirement for around 160,000m2 business (Use Class B1-B8) floorspace across the District. • To meet identified requirements during the Plan period, around 25 hectares of new employment land suitable for Business Use Classes (B1-B8) uses will be brought forward. This will comprise around 5 hectares office space and around 20 hectares of industrial/warehousing space.	• The total population of Chichester District is 113,800. • For the 15-44 age range, Chichester District is below the national average of 40.5% with 32.2%. This is in contrast to over the age of 65 with 24.4% compared to national average of 16.6%. • This pattern is set to continue with predicted increases in the proportion of the population over 75 years, and continuing net loss of the population within the 15 to 24 year age range. • Ethnic minorities make up 7% of the total population of the district. This is lower than county (11.1%), regional (14.8%) and national (20.2%) averages.

Eastbourne Borough Council	Sustainable Development To implement a development strategy that delivers sustainable communities and high standards of design and sustainable construction. 2: Sustainable Growth To deliver new housing, employment and shopping opportunities by planning positively and proactively to meet the needs of all sections of the local community and sustainable growth within environmental constraints. 3: Town Centre Regeneration To strengthen Eastbourne's Town Centre as a leading sub-regional shopping and leisure destination. 4: Local Economy To give support to a strong and growing local economy built on innovation, creativity and entrepreneurship. 5: Tourism To encourage the retention of existing holiday accommodation, and support upgrading of visitor accommodation, and to support the provision of new high quality/niche tourism based facilities, including provision for conferences. 6: Community Health To promote and enhance healthy lifestyles by assisting the development of affordable housing, cultural, recreational, and sports facilities as well as	Housing delivery 2006-2027: 5,022 Net Units	Job growth and economic prosperity in Eastbourne will be supported. This will enable the achievement of a sustainable economy and a town where people want to live and work. This will be achieved by: • Encouraging development which supports improvements in the local jobs market through creation of additional jobs and employment diversification; • Supporting development which provides for, or achieves, units for new start-up businesses; • Identify sites and land for employment use to meet the need for 55,430m2 floorspace in the period to 2027; • Maximising the use of existing employment sites, through redevelopment for employment use and increased density on existing industrial estates, and the upgrading of the existing stock; • Allocating land within the town centre through the Town Centre Area Action Plan for new B1(a) office use; • Supporting the development of B1(a) office use at Sovereign Harbour; • Supporting the Education and Training sector of the Eastbourne economy through a flexible approach to expansion proposals; and	

	community and health care provision, and ensuring adequate infrastructure provision. 7: Green Space and Biodiversity To designate a network of green spaces linking the South Downs, Eastbourne Park and Pevensey Levels, to protect the diverse character and local distinctiveness of the Borough as well as encourage biodiversity and provide access to additional leisure opportunities. 8: Sustainable Travel To reduce the growth in car-based travel by reducing the need to travel and by promoting alternative travel choices including walking, cycling and public transport. 9: Quality of the Built Environment To ensure high standards of design and build throughout the Borough, paying particular attention to the historic built environment, conservation areas and ensuring sustainable construction, in all developments. 10: Sustainable Neighbourhoods To ensure that the diverse needs of local communities are delivered, having regard to the sustainability and capacity of each neighbourhood, the infrastructure needed and the opportunities to meet requirements.		• Protecting good quality employment space, and resisting change of use. Any proposal will be considered in a sequential process which gives priority to retention unless the site is unviable for employment use or is otherwise unsuitable.	

Horsham District Council	Objective themes: • Economic prosperity • High quality of life • Opportunities for all • Valued natural and historic environment • A green sustainable place Objectives: 1. Ensure that future development in the district is based on sustainable development principles that strike the correct balance between economic, social and environmental priorities and delivers living, working and balanced communities which contribute to community cohesion. 2. To meet employment needs, create opportunities to foster economic growth and regeneration, and maintain high employment levels in the district which help reduce commuting distances. 3. To protect and promote the economic viability and vitality of Horsham town, the smaller market towns and the rural centres and promote development which is	Provision is made for the development of at least 16,000 homes and associated infrastructure within the period 2011-2031, at an average of 800 homes per annum. This figure will be achieved by: 1. Housing completions for the period 2011 – 2015; 2. Homes that are already permitted or agreed for release; 3. Strategic Sites: a. At least 2,500 homes at Land North of Horsham b. Around 600 homes at Land West of Southwater	Sustainable employment development in Horsham district for the period up to 2031 will be achieved by; 1. Allocating land for a high quality business park at Land North of Horsham. 2. Redevelopment, regeneration, intensification and smart growth of existing employment sites. 3. The formation and development of small, start-up and move-on businesses, as well as home working and home based businesses, by encouraging provision of small units through development proposals. 4. Encouraging appropriate workspace and ICT infrastructure, such as high speed broadband, as an integral part of development, including residential development to support flexible working, home working and businesses with the flexibility to operate anywhere. 5. Retention of Key Employment Areas, for employment uses. 6. Promotion of the district as an attractive place to stay and visit to increase the value of the tourism economy. 7. Encouraging sustainable local employment growth through Neighbourhood Development Plans.	At the time of the 2011 Census, there were 131,300 people living in Horsham district, in 54,900 households. Since 2001, there has been a clear reduction in the proportion of 30-40 year olds in the District. In 2001, the 30-34 age group made up approximately 7% of the population, and by 2011 it was 5.1%. The percentage of 35-39 year olds has reduced even more, falling from approximately 8.4% in 2001 to 6.2% in 2011. A similar trend has been experienced in West Sussex and the South East, but to a lesser extent. Within Horsham district, there has been an increase in the percentage of 60-64 year olds since 2001.

	appropriate within the existing hierarchy and diversity of settlements in the district. 4. To recognise and promote the role of Horsham Town as the primary focus for the community and businesses in the district whilst preserving the unique ambiance that contributes to its attractiveness. The smaller market towns will be recognised as secondary hubs, and encouraged to achieve their role in meeting local needs and acting as a focus for a range of activities, including employment, retail, leisure and recreation. To promote a living and working rural economy where employment opportunities exist which reduce the need for residents to travel, including reducing commuting distances, and facilitate and promote innovation in business including such as high speed broadband. 5. Provide a range of housing developments across the district that: delivers the target number of new homes; respects the scale of existing places; and so far as is possible caters for the needs of all residents, including the delivery of a range of housing sizes and types including affordable housing. 6. To locate new development in sustainable locations that respect environmental capacity and which have appropriate infrastructure, services and facilities in place, or where these can realistically be provided; and to	c. Around 150 homes at land south of Billingshurst 4. The provision of at least 1500 homes throughout the district in accordance with the settlement hierarchy, allocated through Neighbourhood Planning. 5. 750 windfall units	8. Encouraging the expansion of higher education facilities related to research and development and employment training activity. 9. Identifying additional employment areas to meet the need for appropriate new business activity. Policy SD2 – Employment and Business Opportunities A new high quality business park shall be provided in the area indicated on the concept Masterplan Map for approximately 46,450m2 (500,000ft2). Sufficient floorspace is to be provided in the first phase of the development to meet demand including the needs of existing employers within the District that wish to relocate.	

	encourage the appropriate re-use of brownfield sites in sustainable locations. 7. To protect, enhance and, where appropriate, secure the provision of additional accessible community services, facilities, open spaces and infrastructure throughout the district in accordance with local and district needs. 8. To safeguard and enhance the character and built heritage of the district's settlements and ensure that the distinct and separate character of settlements, are retained and, where possible, enhanced and amenity is protected. 9. Identify and preserve the unique landscape character and the contribution that this makes to the setting of rural villages and towns and ensure that new development minimises the impact on the countryside. 10. To safeguard and enhance the environmental quality of the district, ensuring that development maximises opportunities for biodiversity and minimises the impact on environmental quality including air, soil, water quality and the risk of flooding. 11. Ensure that new development minimises carbon emissions, adapts to the likely changes in the future climate and promotes the supply			

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
	of renewable, low carbon and decentralised energy.			

Lewes District Council	1. To stimulate and maintain a buoyant and balanced local economy through regeneration of the coastal towns, support for the rural economy and ensuring that the economy is underpinned by a balanced sector profile. 2. To maintain and enhance the vitality and viability of the district's town centres, retail centres and local centres as hubs for shopping, business, entertainment, cultural and community life. 3. To deliver the homes and accommodation for the needs of the district and ensure the housing growth requirements are accommodated in the most sustainable way. 4. To take advantage of the richness and diversity of the district's natural and heritage assets to promote and achieve a sustainable tourism industry in and around the district. 5. To work with other agencies to improve the accessibility to key community services and facilities and to provide the new and upgraded infrastructure that is required to create and support sustainable communities. 6. To conserve and enhance the high quality and character of the district's towns, villages, and rural environment by ensuring that all forms of new development are designed to a	6, 900 net additional dwelling to be delivered 2010-2030	To stimulate and maintain a buoyant and balanced local economy through regeneration of the coastal towns, support for local and key strategic businesses and the rural economy and ensuring that the district's economy does not become reliant on one or two sectors, the local planning authority will take a flexible and supportive approach to economic development through the following measures: 1. When and where appropriate, identify sufficient sites in sustainable locations to provide for a flexible range of employment space to meet current and future needs. Within the South Downs National Park the pursuit of National Park Purposes will be paramount. 2. Safeguard existing employment sites from other competing uses unless there are demonstrable economic viability or environmental amenity reasons for not doing so. This will include: a. A demonstrated lack of tenant/occupier interest. b. A demonstrated lack of developer interest. c. Serious adverse environmental impacts from existing operations. d. Where the site is otherwise unlikely to perform an employment role in the future.	

	high standard and maintain and enhance the local vernacular and 'sense of place' of individual settlements. 7. To conserve and enhance the natural beauty, wildlife and cultural heritage of the area. 8. To maximise opportunities for re-using suitable previously developed land and to plan for new development in the highly sustainable locations without adversely affecting the character of the area. 9. To reduce the need for travel and to promote a sustainable system of transport and land use for people who live in, work in, study in and visit the district 10. To ensure that the district reduces causes of climate change and is proactive regarding climate change initiatives 11. To reduce the district's vulnerability to the impacts of climate change, particularly by seeking to reduce the number of properties, community assets and infrastructure that are at an unacceptable risk of flooding, or coastal erosion.		e. Where the loss of some space would facilitate further/improved employment floorspace provision 3. Support the appropriate intensification, upgrading and redevelopment of existing employment sites for employment uses. Where appropriate, mechanisms such as Local Development Orders and 'value added' mixed use schemes will be used. 4. Support the delivery of new office space to meet modern requirements. 5. Encourage and support small, flexible, start-up and serviced business units (including scope for accommodating business expansion). This would include support for economic growth in rural areas through the conversion of existing buildings and appropriate, well designed new buildings for suitable business uses and for sustainable tourism developments. In addition, support will be given for farm diversification schemes and enterprises that help maintain the viability of farm businesses engaged in sustainable land management. 6. Promote the development of sustainable tourism, including recreation, leisure, cultural and creative sectors, and having particular regard to the opportunities provided by the South Downs National Park, both within and outside the National Park boundary. 7. Support the continued use of Newhaven port for freight and passengers including plans for expansion and modernisation of the port as identified in the	

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
			port authority's Port Masterplan. Support will also be provided to the delivery of onshore infrastructure and support services for the Rampion offshore windfarm. 8. Promote modern and high speed e-communications and IT infrastructure. 9. Encourage sustainable working practices (eg. homeworking and live/work). 10. Support opportunities for the improvement of the skills and educational attainment levels of the district's labour supply, including new education and training facilities	

Mid Sussex District Council	1. To promote development that makes the best use of resources and increases the sustainability of communities within Mid Sussex, and its ability to adapt to climate change 2. To promote well located and designed development that reflects the District's distinctive towns and villages, retains their separate identity and character and prevents coalescence 3. To protect valued landscapes for their visual, historical and biodiversity qualities 4. To protect valued characteristics of the built environment for their historical and visual qualities 5. To create and maintain easily accessible green infrastructure, green corridors and spaces around and within the towns and villages to act as wildlife corridors, sustainable transport links and leisure and recreational routes 6. To ensure that development is accompanied by the necessary infrastructure in the right place at the right time that supports development and sustainable communities. This includes the provision of efficient and sustainable transport networks	The District Plan sets a housing provision figure of 13,600 homes in the period 2014 – 2031 (800 per annum).	The total number of additional jobs required within the district over the plan period is estimated to be an average of 370 jobs per year. This will be achieved by: • Encouraging high quality development of land and premises to meet the needs of 21st century businesses; • Supporting existing businesses, and allowing them room to expand; • Encouraging inward investment, especially the location, promotion and expansion of clusters or networks of knowledge, creative or high technology industries; • Seeking the provision of appropriate infrastructure to support business growth – in particular high speed broadband connections. New employment land and premises: • Allocating 30 hectares of land as a high quality business park at Burgess Hill to the east of Cuckfield Road; • Incorporating employment provision within large scale housing development as part of a mixed use development where it is appropriate; and • Allowing new small-scale economic development, in the countryside, including tourism	According to the 2011 Census, 18.1% of the Mid Sussex population are aged 65 and over, and the Office of National Statistics has projected that this will increase to 21.2% by 2021. There is also a projected increase in people aged over 85 years living in Mid Sussex from 2.8% to 3.3% by 2021

	7. To promote a place which is attractive to a full range of businesses, and where local enterprise thrives 8. To provide opportunities for people to live and work within their communities, reducing the need for commuting 9. To create and maintain town and village centres that are vibrant, attractive and successful and that meet the needs of the community 10. To support a strong and diverse rural economy in the villages and the countryside 11. To support and enhance the attractiveness of Mid Sussex as a visitor destination 12. To support sustainable communities which are safe, healthy and inclusive 13. To provide the amount and type of housing that meets the needs of all sectors of the community 14. To create environments that are accessible to all members of the community 15. To create places that encourage a healthy and enjoyable lifestyle by the provision of first class cultural and sporting facilities,			

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
	informal leisure space and the opportunity to walk, cycle or ride to common destinations			

Wealden District Council	SPO1 We will help manage countryside resources and assist in the development of the rural economy whilst protecting and enhancing recognised biodiversity and geodiversity attributes, in particular we will protect the internationally important sites of the Pevensey Levels and Ashdown Forest and other designated areas of bio and geodiversity. We will also protect, and will work with others to enhance and manage, the distinct landscapes of the District, particularly, but not exclusively, those nationally designated. SPO2 We will ensure that the intrinsic quality of the historic environment is protected and that Wealden's environmental, heritage and cultural assets are used appropriately to encourage suitable tourism development and support inward investment SPO3 To help address the need for homes, to ensure the economic prosperity of the District and to support its residents and the changing requirements of residents in terms of size, type, tenure and location of homes, whilst protecting our valued environment we will provide for at least 9440 homes within Wealden from 2006 to 2027. The delivery of on average 450 dwellings per annum provides a realistic timeframe for the market to deliver the housing and also better provides for the timely delivery of necessary infrastructure.	Since 2006 and up until 1st April 2010 1331 dwellings have been built within Wealden. In addition, 3558 dwellings have been committed through extant planning consents and deliverable Non Statutory Plan allocations. In total we have already identified around 4889 dwellings that can or have been delivered in the plan period. Trend based projections show an increase in population in Wealden from 2006 to 2030 of around 19,000 persons, which equates to around 16,800 households. The total number of additional houses	The District's economy is heavily dependent on the service sector as well as, to a lesser extent, the construction industry, agriculture, fishing, energy and water sector. Whilst this has helped generate high levels of employment, workplace salaries in the District are relatively low. There are high levels of out-commuting with higher paid earners to the north of the District accessing jobs outside of the District compared to the south. Although the economy is dominated by small businesses, with only a few employers employing more than 10 people, very few of these are in what are generally regarded as the main business growth sectors. However, Wealden's contribution to the overall East Sussex economy is greater than other East Sussex Authorities. Three quarters of small businesses in the District are farm based, often in former agricultural buildings converted to business space, and increasing numbers of people work from home. The diversified agricultural sector makes a significant impact on the area both in terms of its economy and by shaping the landscape Provision will be made for some net additional 40,000 sq. metres net employment floorspace (B1/B2/B8) to provide for 128,695 sq. metres net employment floorspace and 17,000 sq. metres net additional retail floorspace over the period 2006-2027.	Wealden's population comprises around 62,000 households. The District has a comparatively small ethnic minority population. The age structure has a much smaller proportion of the population in the 15-39 age range than the national average, with a significantly above average number of people of pensionable age. Without some intervention this structure is set to continue with predicted increases in the proportion of the population over 75 years, and continuing net loss of the population within the 15 to 24 year age range. The ageing population and comparatively low birth rate would result, without in-migration, in an overall reduction in Wealden's population.

	The majority of new housing will be accommodated within, or as sustainable extensions to, existing towns, while allowing for limited growth within those villages capable of accommodating development in a sustainable fashion. Development will be focused in and around the settlements of Hailsham/ Hellingly, Polegate/ Willingdon/ Stone Cross and Uckfield to help stimulate investment in those centres, and, to varying but lesser degrees, in and around Crowborough and Heathfield to meet housing need SPO4 We will ensure the long term viability of our five principal towns by supporting a range of improvements compatible with their local retail and service functions and reflecting the scope that exists for physical change within their centres. This will include more substantial investment in Uckfield and Hailsham which will allow multi-agency planned and managed developments with improved business and community infrastructure, and with a range of new job opportunities SPO5 We will continue to work with East Sussex County Council and schools to meet the learning needs of local people, and to ensure that the local workforce has the necessary skills and facilities to be able to participate fully in local employment	identified in the table above is 14,635 dwellings. With dwellings granted planning permission between April 2013 and April 2015 and all consents granted or resolved to be granted for strategic sites contained within the Core Strategy up until September 2015 the total dwelling numbers is 19,963. Based on a plan period from 2013 to 2033, this equates to 998 dwellings per annum, which is 263 dwellings per annum greater than the District's Objectively Assessed Housing Need. As the plan period starts from 2013 any additional houses granted within the settlements may be taken off the total in		Even with a net increase in in-migration, assisted by the provision of housing, the ageing population has an impact on the amount of people living in Wealden in the workforce. In order to maintain and enhance the working age population to sustain and grow our economy and to sustain our town centres and services, Wealden is reliant upon in-migration. Coupled with the changing nature of household formation this provides an overall increased need and demand for housing and accompanying growth.

	SPO6 In order to improve economic prosperity we will support the growth of the Wealden economy by helping existing companies to expand and develop. We will help improve the range of employment opportunities available and provide for an additional 40,000 sq. metres net of employment floorspace, to that already committed, and 17,000 sq. metres net of retail floorspace.There will be an increased opportunity for people to work close to where they live, to improve access to jobs, help reduce current levels of net out commuting from Wealden and decrease the net out migration of 15 to 24 year olds. New jobs will make a positive contribution to the improved economic performance of Uckfield, Hailsham, Polegate and Willingdon and assist in tackling forms of deprivation caused by economic circumstances SPO7 We will encourage reduction of the need to travel by car by concentrating development where it can most closely relate to public transport opportunities, improving the offer of our towns in terms of retail, leisure and recreation and by making it easier to travel by more sustainable modes of transport. We want to see noticeable improvements in journey quality for those people making trips on foot, bicycle or by public transport	future stages of the plan. However this is for testing purposes only, and all housing figures are subject to future change.		

	SPO8 We will maintain and where appropriate enhance through the encouragement of growth, the effective network of villages that will continue to support the day to day needs of our rural communities, and which will accommodate some additional growth where this would be sustainable SPO9 We will ensure development takes full account (by mitigation or adaptation) of the likely forecast impacts of climate change including: minimising the emissions of greenhouse gases; the use of non-renewable energy and natural resources; and by encouragement of construction using sustainable techniques SPO10 We will seek to ensure the safety of residents and reduce the economic impact of flooding events by avoiding the allocation of land for employment and housing growth in areas subject to medium and high flood risk, taking into account the predicted impact of climate change SPO11 We recognise the shortfalls in open space, leisure and recreational facilities identified within the District and will work with others to enhance the District's geodiversity and biodiversity by creating a coherent network of green infrastructure, especially in and around our towns, that can better support wildlife and reduce the impact			

	of climate change as well as improving human health through increased accessibility SPO12 We will continue to work with partners to help ensure that Wealden remains a safe place, with levels of crime and disorder well below the national average, and to achieve significant improvements in the safety records on Wealden's roads SPO13 We will encourage the development of high quality, safe and attractive living environments for communities in both towns and villages, while promoting local distinctiveness through good design in all new development. We want future built development to create spaces and places which are sustainable, distinctive and durable- places where people will want to live. These will be expected to make a real contribution to addressing climate change issues and addressing the needs of our ageing population SPO14 We will maximise the use of previously developed land for new development wherever possible, and make the most efficient use of existing resources, for example by ensuring housing densities are compatible with the particular location and by utilising existing capacity in infrastructure, services and facilities			

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
	SPO15 We will ensure, with our partners, that the spatial strategy's infrastructure requirements are clearly identified and will work with partners to ensure that this is provided at the right time to support development. New development will be expected to contribute to strategic and local infrastructure requirements, through both on site facilities and financial contributions for off-site works. In some cases development will require to be phased to ensure delivery of necessary infrastructure to support proposed growth			

Worthing Borough Council	1. Protect the natural environment and address climate change 2. Revitalise Worthing's town centre and seafront 3. Deliver a sustainable economy 4. Meet Worthing's housing needs 5. Reduce social and economic disparities and improve quality of life for all 6. Deliver high quality distinctive places 7. Improve accessibility	Net need: 435 per annum 8,702 (20-years)	Policy 3 - Providing for a Diverse and Sustainable Economy Delivering sustainable economic growth by ensuring that the right conditions are created. This will be done by: • Identifying sufficient sites in sustainable locations to provide for a range of employment space to meet the needs of current and future business needs • Promoting the delivery of new town centre office space through major new mixed–use schemes • Promoting key employment areas for reinvestment, intensification and redevelopment to bring about upgraded and additional employment floor space • Identifying employment renewal opportunities for under-utilised and vacant premises • Making more efficient use of existing and underused accessible employment sites • Supporting the development of tourism, leisure, sporting and creative industries with particular emphasis on the town centre and seafront locations • Improving the skills and educational achievement of the town's residents to match business needs, by	The estimated population in Worthing at mid-2007 was 99,600. Population growth has been relatively low in recent years but the town has experienced in-migration, particularly from Brighton and Hove. A significant aspect of Worthing's population is the relatively large number of older residents, many of whom have retired to the coast from elsewhere. This is particularly true for the over-75 age group, where the percentage of total population is significantly higher than the South East region as a whole. However, the town has seen a relative decline in its 65+ year population over the last 20 years with its proportion of the total population falling by

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
			working with the agencies responsible for their delivery • Promoting a greater choice of start up /serviced offices • Investigating the opportunity for a business incubator with key partners • Supporting the improvement of ICT infrastructure through the provision of ICT enabled sites, premises and facilities and the support of home-based business.	over 8%. Conversely, there has been growth in the mid-age bracket, representing a small shift away from the dominance of the elderly population. Residents from minority ethnic groups make up a relatively small, but important, proportion of the town's population.

Brighton and Hove	SO1 Ensure that all major new development in the city supports the regeneration of the city, is located in sustainable locations, provides for the demands that it generates and is supported by the appropriate physical, social and environmental infrastructure. SO2 Support the continued improvement of the economic performance of the city by identifying and safeguarding an appropriate range of sites and premises to meet demands of high growth and key employment sectors and ensuring there is a well-trained and suitably skilled local workforce. SO3 Develop Brighton & Hove as a major centre on the South Coast for sustainable business growth and innovation, creative industries, retail provision, tourism and transport. SO4 Address the housing needs of Brighton & Hove by working with partners to provide housing that meets the needs of all communities in the city, achieves a mix of housing types, sizes and tenures that is affordable, accessible, designed to a high standard and adaptable to future change. SO5 Maintain and strengthen the role of Brighton city centre, improve its	The council will make provision for at least 13,200 new homes to be built over the plan period 2010 – 2030 (this equates to an annual average rate of provision of 660 dwellings). This will be achieved by: a) Focussing new development in accessible areas of the city and those with the most capacity to accommodate new homes; b) Promoting the efficient use and development of land/sites across the city including higher densities in appropriate locations (see CP12 and CP14)	Employment Land Requirements: The Employment Land Study Review 2012 recommended that the City Plan be guided by forecast growth requirements of 112,240 sq m of office floorspace (B1a, B1b) to 2030 and 43,430 sq m of industrial floorspace (B1c, B2 and B8) over the plan period. To ensure that there are sufficient employment sites and premises to meet this forecast requirement and to facilitate economic growth, Development Area proposals identify strategic allocations to bring forward new high quality employment floorspace (DA2- DA8). CP3 Employment Land Sufficient employment sites and premises will be safeguarded in order to meet the needs of the city to 2030 to support job creation, the needs of modern business and the attractiveness of the city as a business location. This will be achieved through: 1. Strategic proposals and allocations for B Use Class employment floorspace 2. The identification of Central Brighton as the city's prime office location where B1a offices will be protected. The council will support proposals for the upgrade and refurbishment of existing office accommodation so that they meet modern standards required by business; are more resource efficient and improve the environment and townscape of the site or premises.	The city has a relatively young population, with population growth over the last 20 years concentrated in the 15-44 age groups. Looking ahead over the next 20 years, the city's population will continue to be focussed on households aged in their 20s, 30s, and 40s. This reflects the nature of Brighton as a destination for young people, and the presence of two universities and the many English Language schools, international business schools and University pathfinder colleges within the centre of the city. A high proportion of young working age adults provides the city with many advantages in terms of its potential labour pool.

	attractiveness and recognise and protect its unique cultural, tourism and retail mix and look to diversify the evening economy and leisure function. SO6 Through joint working with Adur District Council, West Sussex County Council and the Shoreham Port Authority, maximise the potential of Shoreham Harbour for the benefit of existing and future residents, businesses, Port-users and visitors through a long term regeneration strategy. SO7 Contribute to a reduction in the ecological footprint of Brighton & Hove and champion the efficient use of natural resources and environmental sustainability. SO8 Ensure design and construction excellence in new and existing buildings in Brighton & Hove which responds positively to the challenges posed by local impacts of climate change, resource-efficiency, and delivers biodiversity and environmental objectives and improvements to accessible natural green space. SO9 Make full and efficient use of previously developed land in recognition of the environmental and physical constraints to development posed by the sea and the South Downs.	c) Making strategic site allocations in this Plan for at least 3,635 additional new homes; d) Preparing Part 2 of the City Plan (Development Policies and Site Allocations) to allocate additional sites to help ensure housing delivery is maintained over the plan period; and e) Ensuring that all new housing development contributes to the creation and/or maintenance of mixed and sustainable communities (see SA6).	3. Protection of various primary industrial estates and business parks for business, manufacturing and warehouse (B1, B2 and B8) use (details in document). The council will support proposals for the upgrade and refurbishment of these estates and premises so that they meet modern standards required by business, are more resource efficient and improve the environment or townscape of the site or premises. Sui generis uses, including waste management facilities, appropriate in nature to an industrial estate location will also be acceptable, provided that they generate employment which is quantitatively and qualitatively comparable to uses within B1- B8 4. In order to secure good quality modern, flexible employment floorspace the council will allow employment-led (residential and employment) mixed use development in various employment sites. There should be no net loss in employment floorspace unless this can be justified. 5. Loss of unallocated sites or premises in, or whose last use was, employment use (Use Classes B1-B8) will only be permitted where the site or premises can be demonstrated to be redundant and incapable of meeting the needs of alternative employment uses (Use Classes B1-B8). Where loss is permitted the priority for re-use will be for alternative employment generating uses or housing. 6. Preparing Part 2 of the City Plan to allocate additional employment sites and mixed use	However, this population profile also has implications for a range of issues such as a sense of local community, potential for crime and disorder, the need for sustainable employment opportunities and the need to provide for a mix of housing units and tenures. Brighton & Hove is a diverse city of neighbourhoods and communities. The proportion of our population who are from Black and minority ethnic backgrounds is increasing. In the 2001 census, 12 per cent of our residents were recorded as not being from White British backgrounds; in 2011 the proportion had increased to 19.5 per cent. The city's population could be expected to

	SO10 To support the implementation of the objectives of the Biosphere Reserve Management Strategy, such as the creation of green links between open spaces and the surrounding downland, changes in the design and management of spaces to create a functioning Green Infrastructure Network. To conserve and enhance the priority areas for biodiversity and to ensure that everyone has good access to and opportunities to be engaged with natural open space. Nature conservation opportunities in open spaces and in new development should be maximised to contribute to Local Biodiversity Action Plan30 objectives. SO11 Provide an integrated, safe and sustainable transport system to improve air quality, reduce congestion, reduce noise and promote active travel. SO12 Ensure design excellence which responds positively to the distinctive character of the city's different neighbourhoods and creates an attractive and accessible well-connected network of streets, spaces and buildings. SO13 Enhance and maintain the distinctive image, character and vibrant, varied heritage and culture of the city to benefit residents and visitors. Support the role of the arts,		allocations to help ensure employment land delivery is maintained over the plan period.	grow by 10.2% to 299,777 by 2030. This represents growth in the population of around 27,759 people by 2030 if current trends continue.

	creative industries and sustainable tourism sector in creating a range of high quality infrastructure support facilities, spaces, events and experiences SO14 Conserve and enhance the South Downs National Park, including the promotion of an enhanced downland landscape which delivers Local Biodiversity Action Plan objectives; more sustainable farming practices and improved public access. Enhance and promote physical and sustainable transport links between the city and the Downs. SO15 Promote new opportunities for sport and recreation. Protect and enhance the quality and quantity of parks and green spaces in the city, formal and informal, improving their interconnectivity, enhancing their individual character, landscape and biodiversity to ensure that they are valued by the whole community and well used throughout the year. SO16 Preserve and enhance the city's recognised cultural heritage and bring vacant buildings of national or local architectural or historic interest back into appropriate uses. Ensure new developments contribute positively to their historic surroundings. SO17 Enhance the seafront as a year round place for sustainable tourism, leisure,			

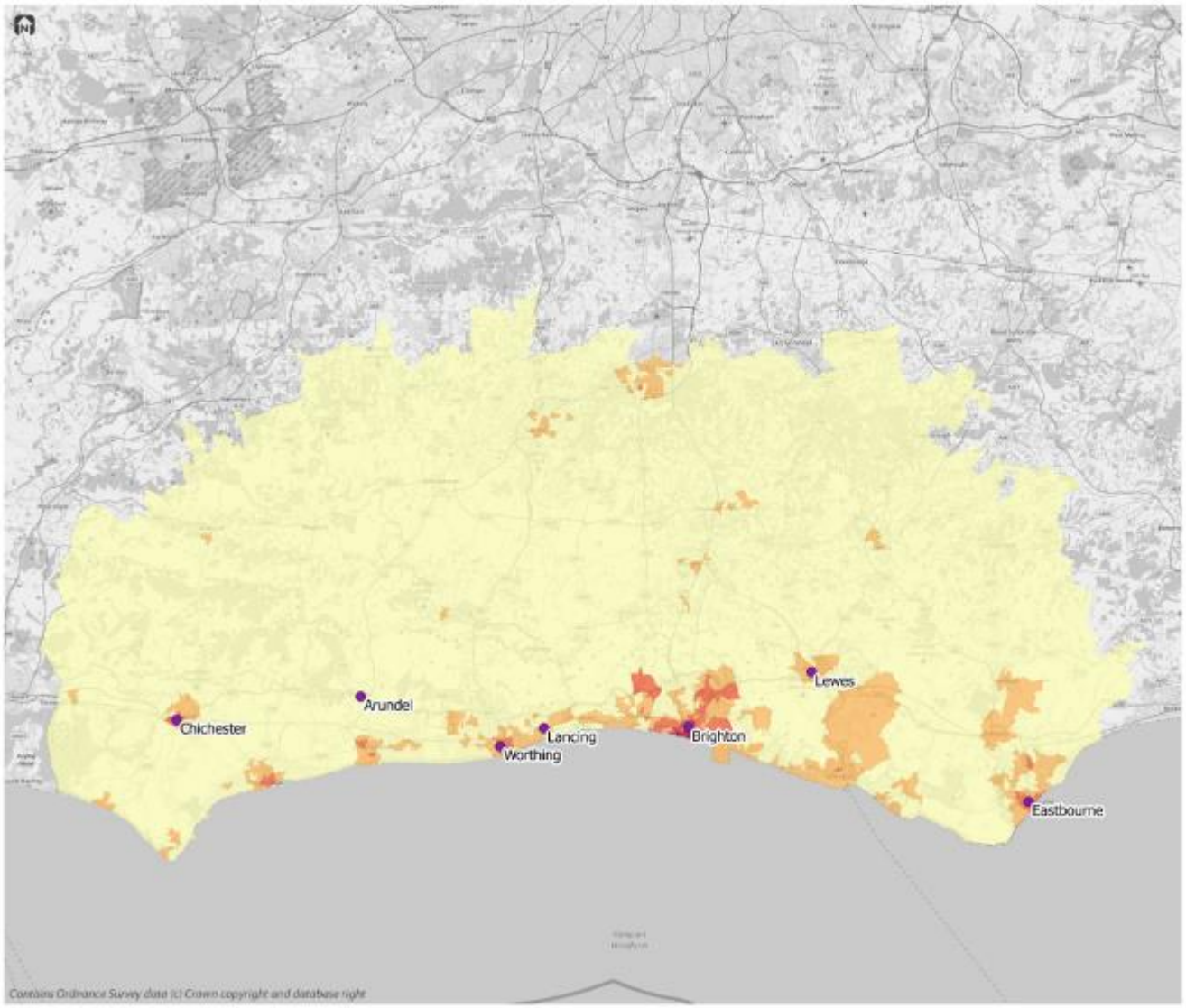
	recreation and culture whilst protecting and enhancing the quality of the coastal and marine environment. SO18 Maintain and enhance the distinct character and physical environment of the city's established network of shopping centres to ensure they remain vibrant, attractive and accessible. SO19 Contribute towards the delivery of more sustainable communities and the reduction of inequalities between neighbourhoods in Brighton & Hove. SO20 Contribute towards reducing inequalities experienced by different groups within the city and recognise the special needs of younger people, older people, disabled people, lesbian, gay, bisexual and trans people and black and minority ethnic people, gypsies and travellers, refugees and asylum seekers and people of different religions and belief in the provision and improvement of accessible and appropriate community facilities, healthcare, education, housing, safety and employment. SO21. Provide additional primary and secondary school places in response to growing demand and future increases in population by working with partners, including not for profit organisations, to build new schools and by expanding successful			

Local Authority	Key Objectives	Housing Needs	Employment and Economy	Population Growth
	schools (where possible, with the consent of the school). Assist in the long term planning of higher and further education establishments, and ensure that they play a full part in the city's economic, social and environmental development. SO22 Across the city apply the principles of healthy urban planning and work with partners to achieve an equality of access to community services (health and learning), to opportunities and facilities for sport and recreation and lifelong learning. Ensure pollution is minimised and actively seek improvements in water, land and air quality and reduce noise pollution. SO23 Ensure that Brighton & Hove is a city where all people feel safe in public places and within their neighbourhoods through working with partners to create a safer environment, reduce crime and reduce the fear of crime.			

Appendix 2

Car Ownership

A New Transport Vision for the Sussex Coast - New Transport Strategy Report



Prepared	Reviewed	Date
MC	JSa	Dec 16

Key

Percentage of households without access to a car or van

- 0 - 20%
- 21 - 40%
- 41 - 60%
- 61 - 80%

Client

South Coast Alliance for Transport and the Environment (SCATE)

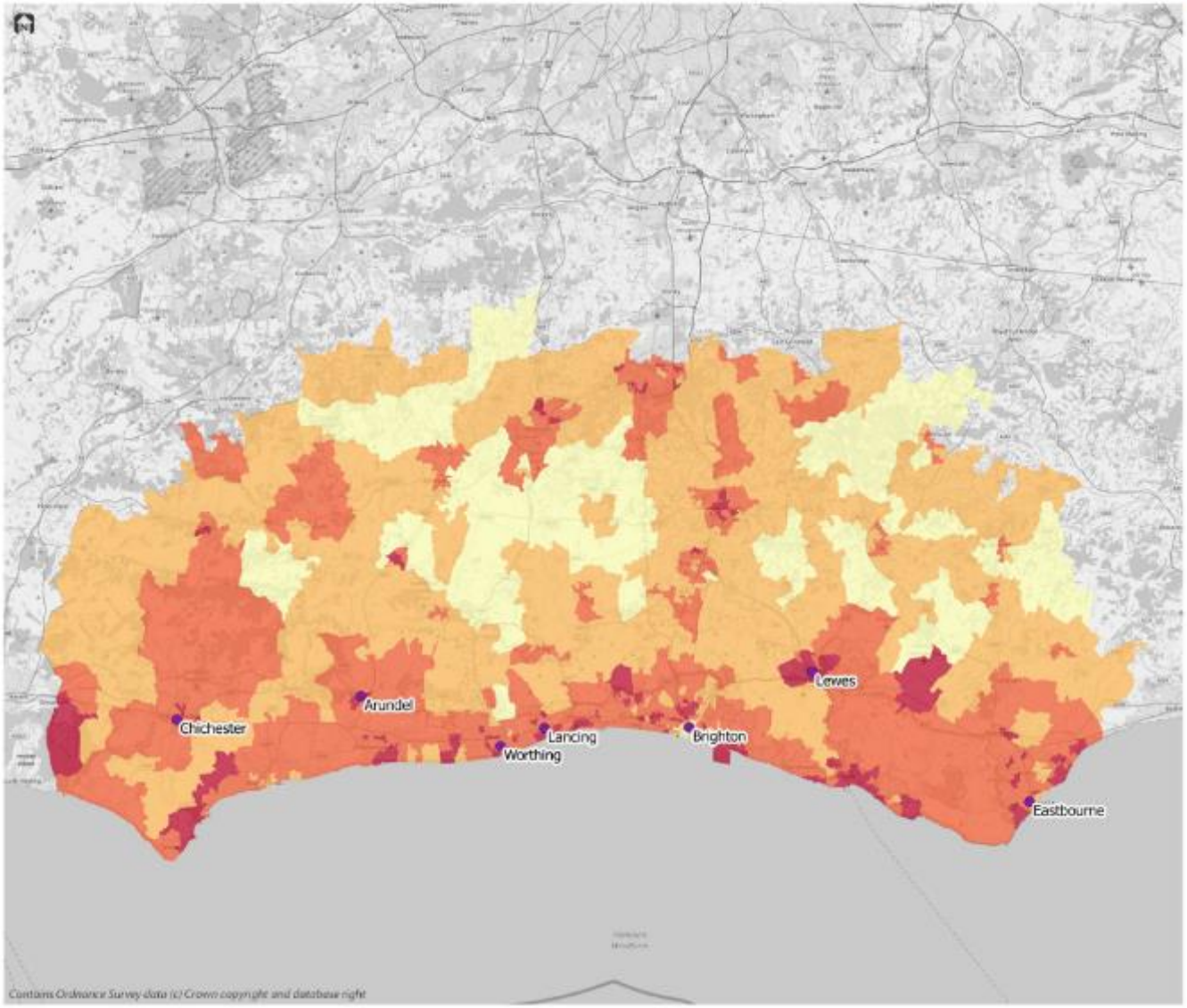
Project

Sussex Coast Alternative Transport Vision

Figure title

Households without access to a car (LSOA Level)

Figure number	Date
Figure 2-1	Dec 2016



Prepared	Reviewed	Date
MC	JSa	Dec 16

Key

Percentage of households with access to one car

- 20 -30%
- 31 - 40%
- 41 - 50%
- 51 - 60%

Client

South Coast Alliance for Transport and the Environment (SCATE)

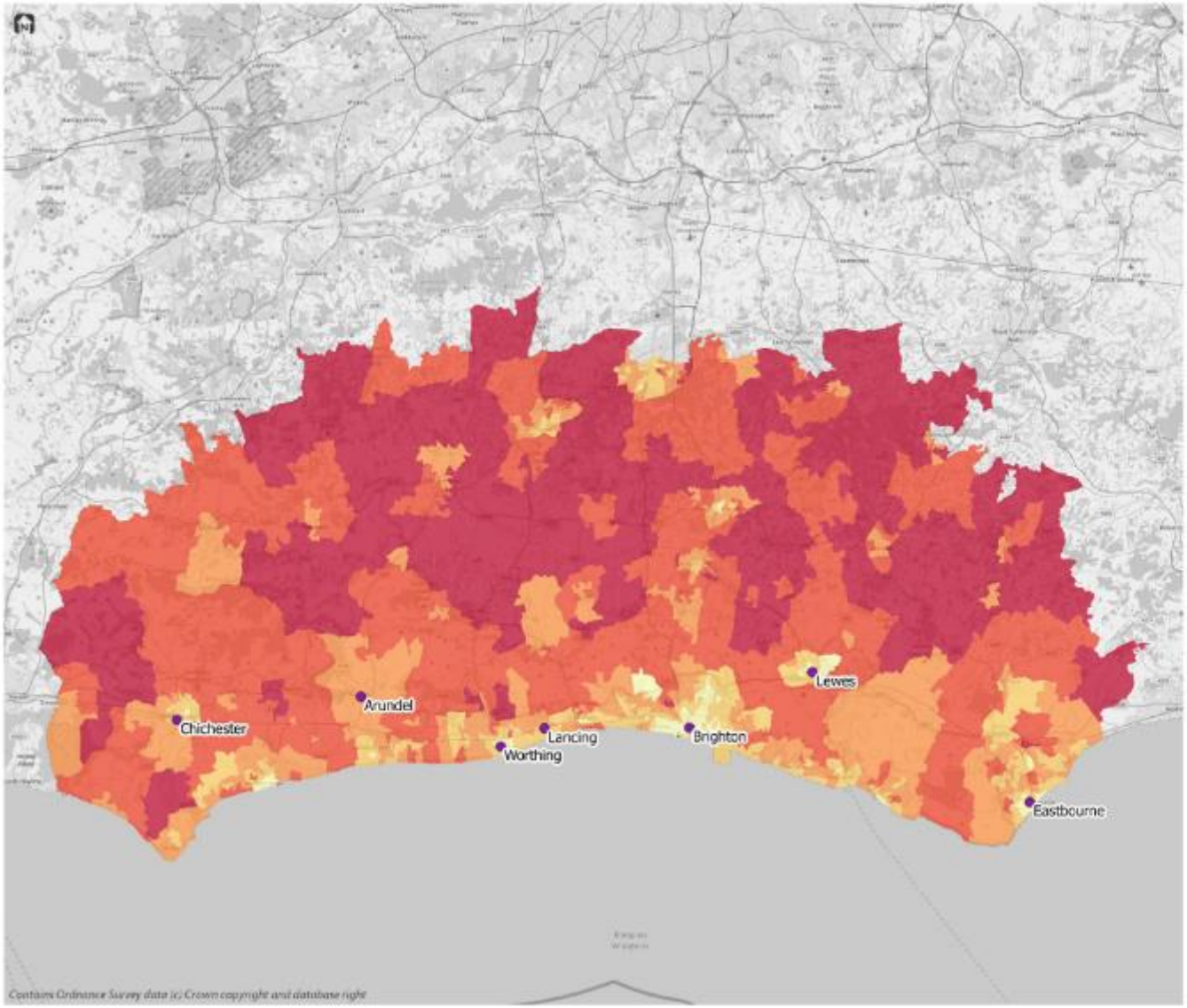
Project

Sussex Coast Alternative Transport Vision

Figure title

Households with access to one car (LSOA Level)

Figure number	Date
Figure 2-2	Dec 2016



Prepared	Reviewed	Date
MC	JSa	Dec 16

Key

Percentage of households with access to two or more cars

- 0 - 20%
- 21 - 30%
- 31 - 40%
- 41 - 60%
- 61 - 70%

Client

South Coast Alliance for Transport and the Environment (SCATE)

Project

Sussex Coast Alternative Transport Vision

Figure title

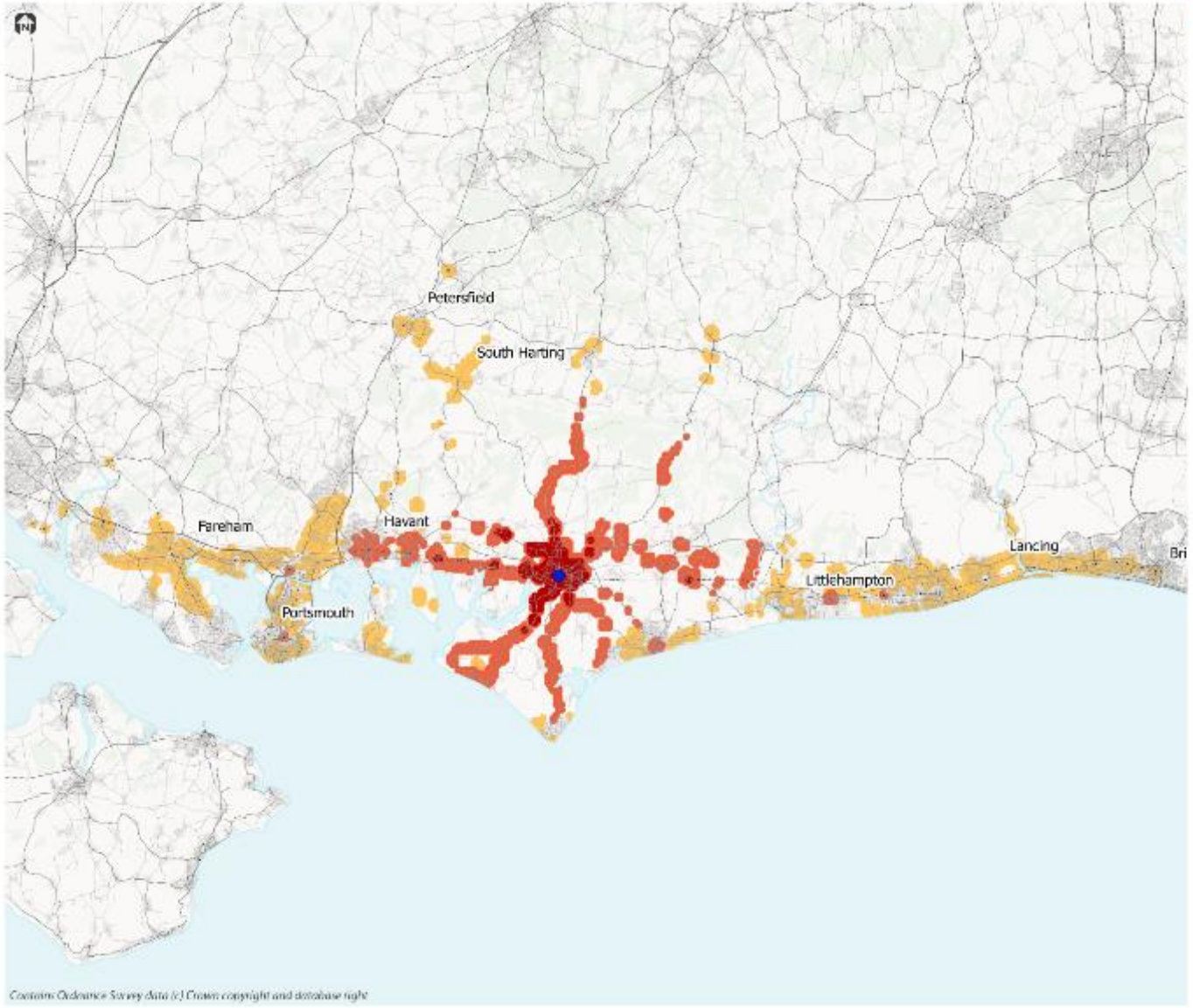
Households with access to two or more cars (LSOA

Figure number	Date
Figure 2-3	Dec 2016

Appendix 3

60-minute Public Transport Accessibility to Key Town Centres

A New Transport Vision for the Sussex Coast - New Transport Strategy Report



Prepared: SN | Reviewed: IS | Date: Dec 16

Key

- Destination

Travel time (mins)

- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60

Client

South Coast Alliance for Transport and the Environment (SCATE)

Project

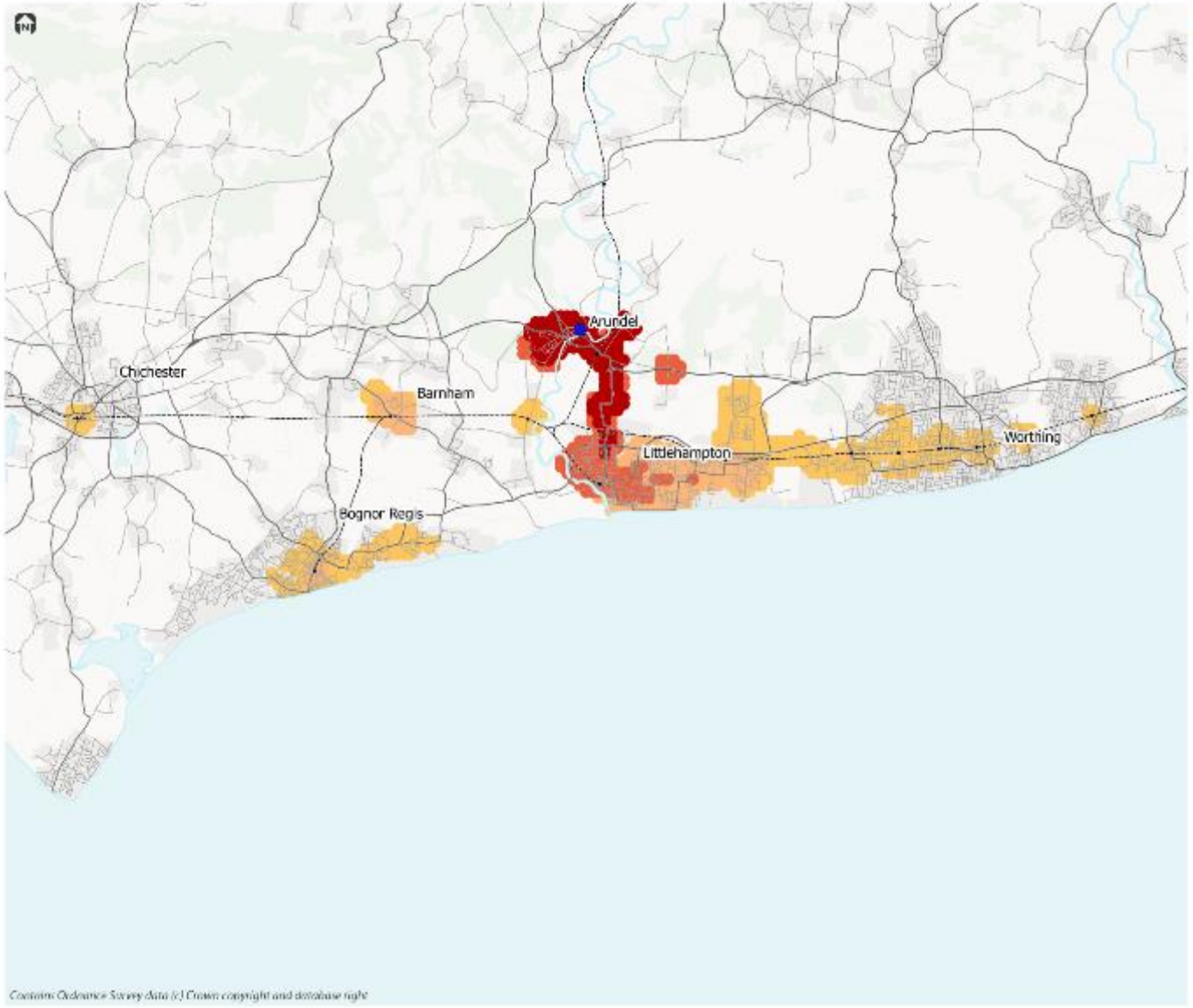
Sussex Coast Alternative Transport Vision

Figure title

60 minute public transport accessibility to Chichester (0700-0900)

Figure number: Figure 1-1

Date: Dec 2016



Prepared	Reviewed	Date
SN	IS	Dec 16

Key

- Destination

Travel time (mins)

- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60

Client

South Coast Alliance for Transport and the Environment (SCATE)

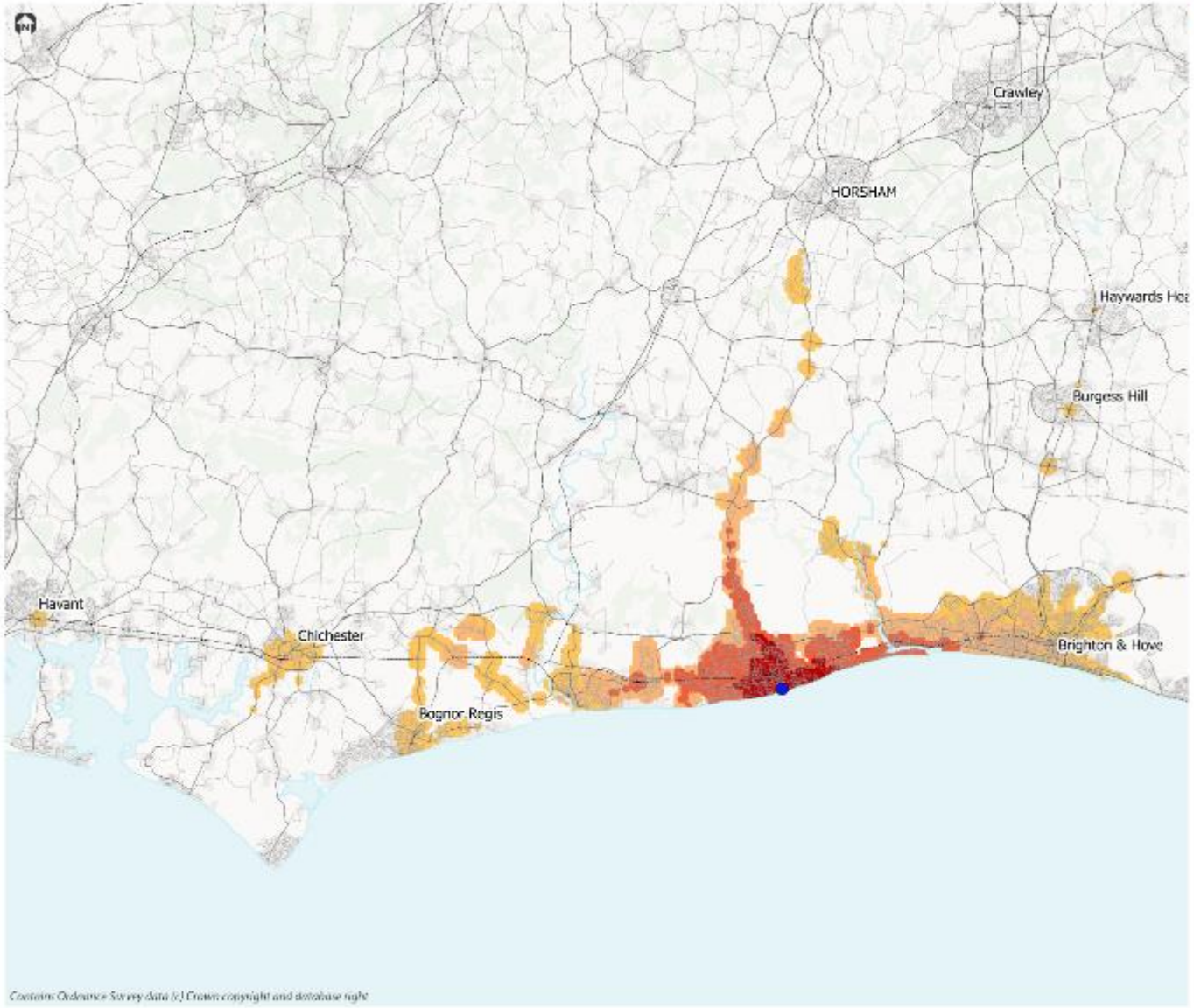
Project

Sussex Coast Alternative Transport Vision

Figure title

60 minute public transport accessibility to Arundel (0700-0900)

Figure number	Date
Figure 1-2	Dec 2016



Prepared	Reviewed	Date
SN	IS	Dec 16

Key

- Destination

Travel time (mins)

- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60

Client

South Coast Alliance for Transport and the Environment (SCATE)

Project

Sussex Coast Alternative Transport Vision

Figure title

60 minute public transport accessibility to Worthing (0700-0900)

Figure number	Date
Figure 1-3	Dec 2016

Prepared	Reviewed	Date
SN	IS	Dec 16

Key

- Destination

Travel time (mins)

- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60

Client

South Coast Alliance for Transport and the Environment (SCATE)

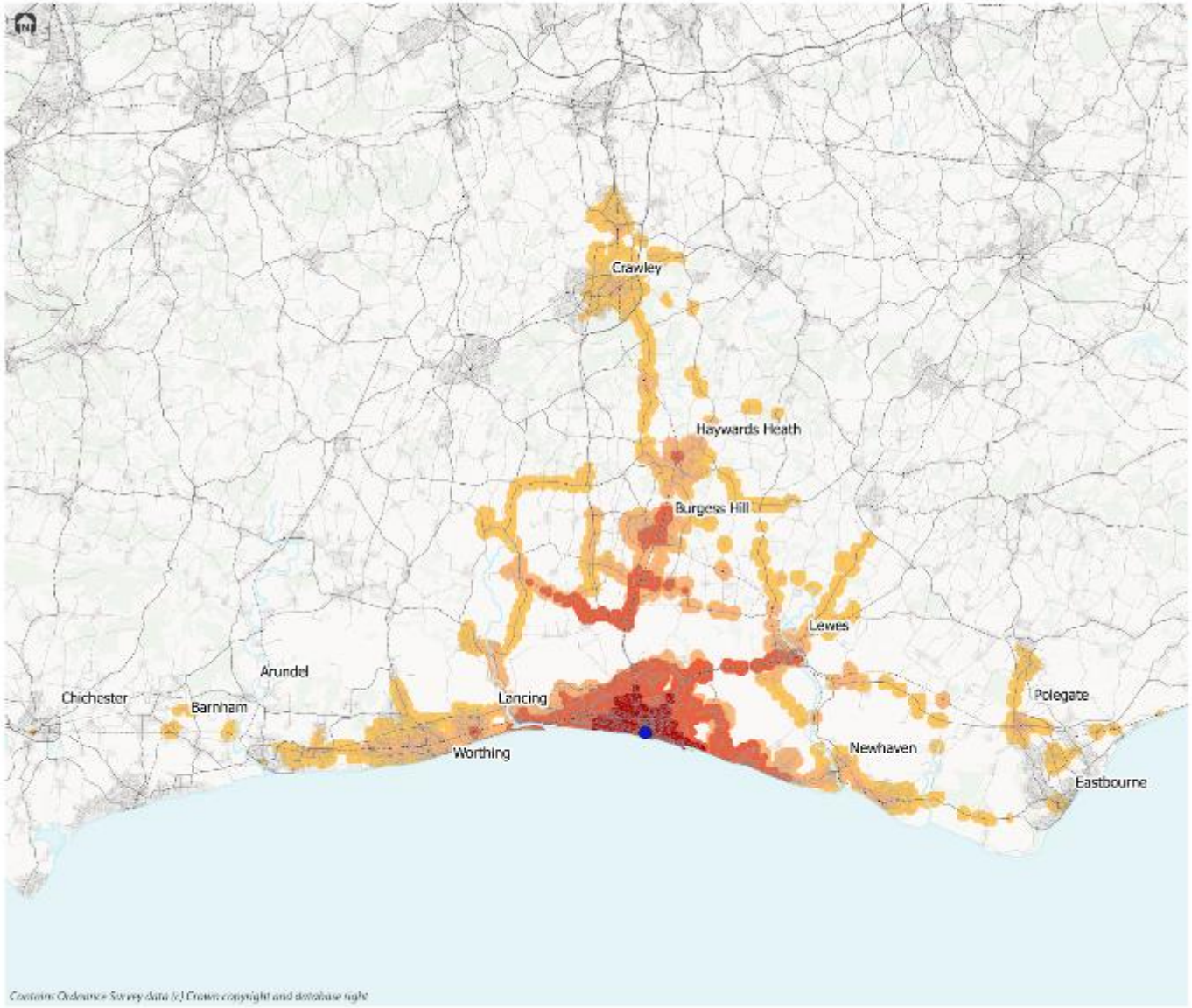
Project

Sussex Coast Alternative Transport Vision

Figure title

60 minute public transport accessibility to Lancing (0700-0900)

Figure number	Date
Figure 1-4	Dec 2016



Prepared	Reviewed	Date
SN	IS	Dec 16

Key

- Destination

Travel time (mins)

- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60

Client

South Coast Alliance for Transport and the Environment (SCATE)

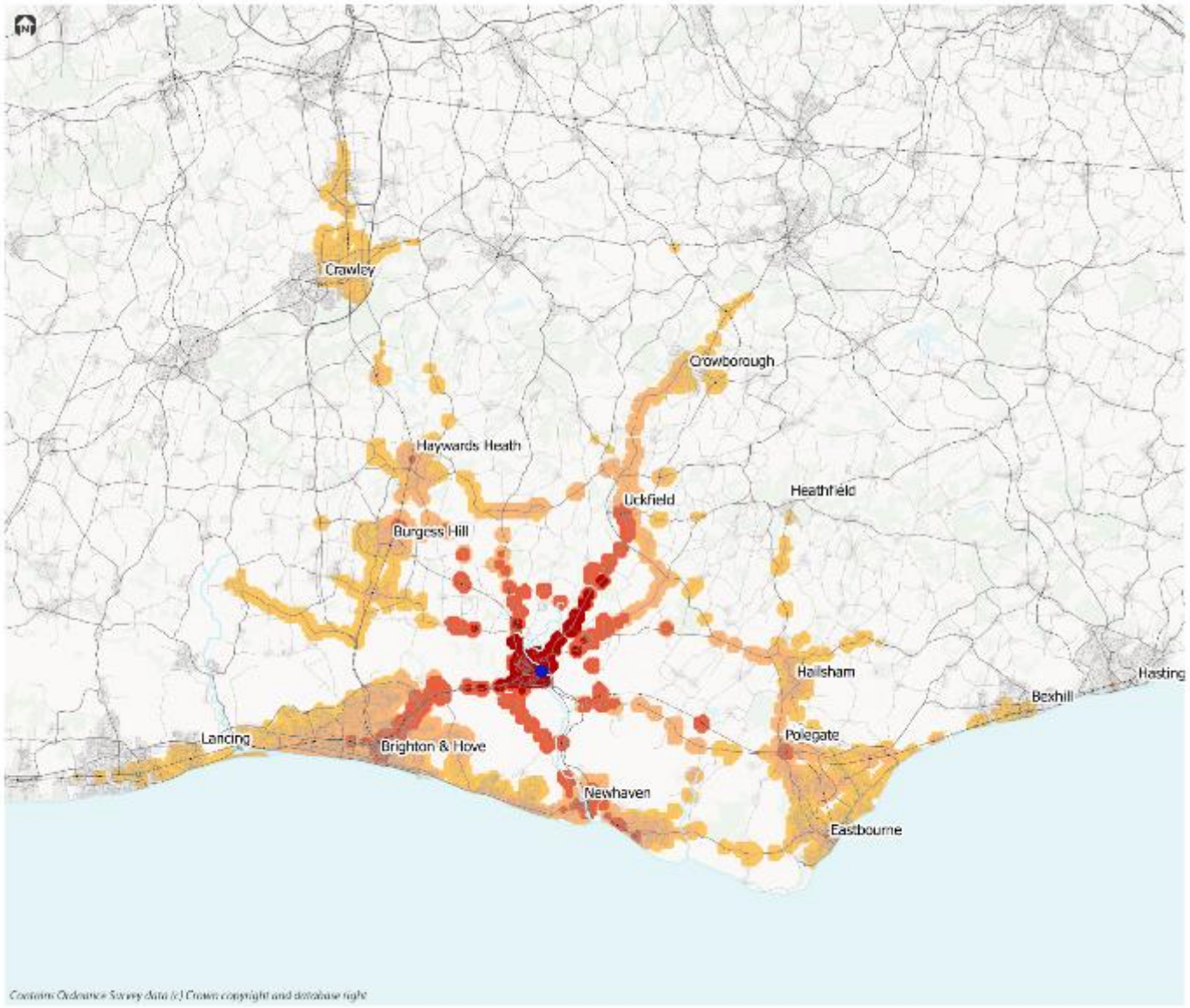
Project

Sussex Coast Alternative Transport Vision

Figure title

60 minute public transport accessibility to Brighton (0700-0900)

Figure number	Date
Figure 1-5	Dec 2016



Prepared	Reviewed	Date
SN	IS	Dec 16

Key

- Destination

Travel time (mins)

- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60

Client

South Coast Alliance for Transport and the Environment (SCATE)

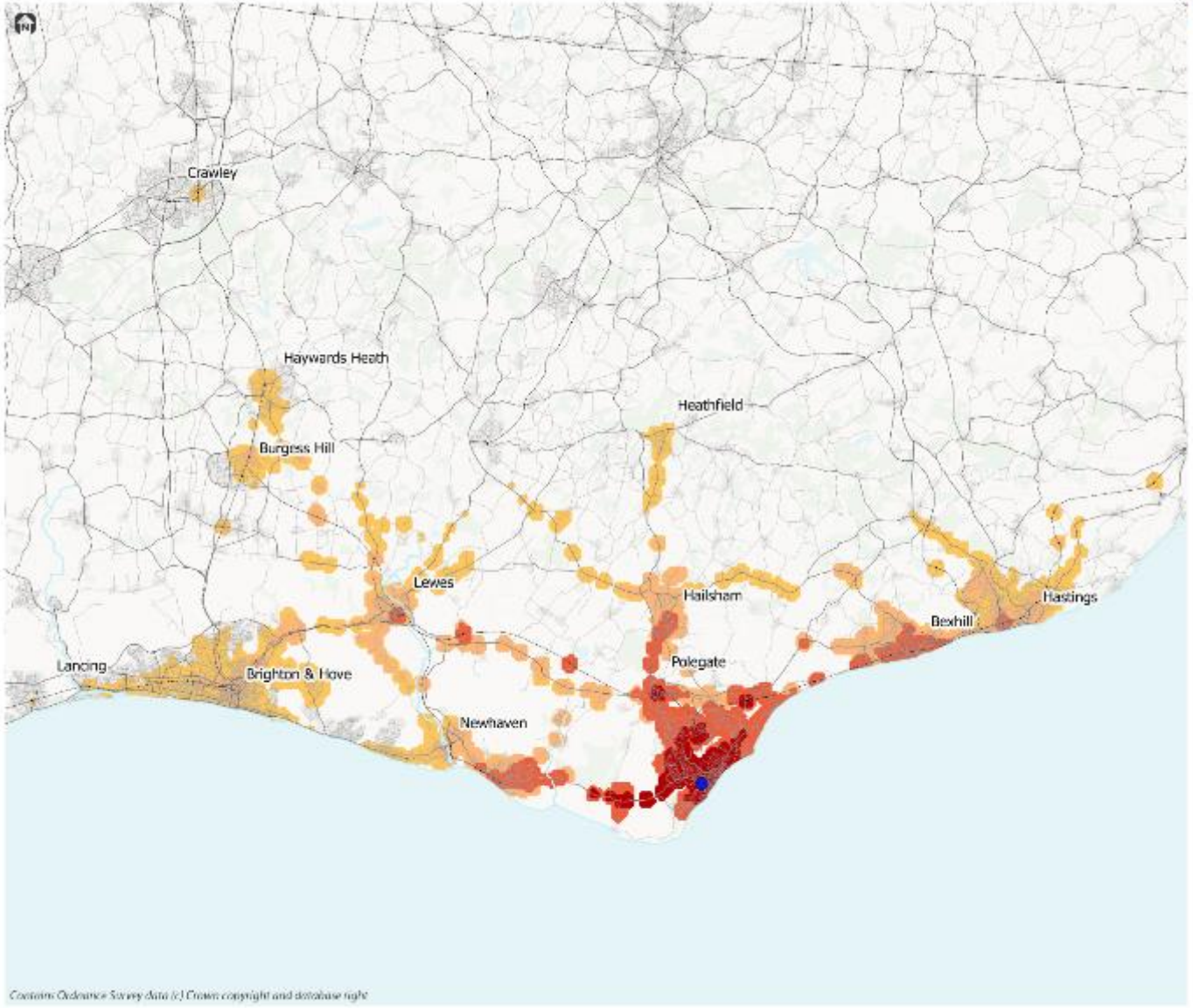
Project

Sussex Coast Alternative Transport Vision

Figure title

60 minute public transport accessibility to Lewes (0700-0900)

Figure number	Date
Figure 1-6	Dec 2016



Prepared	Reviewed	Date
SN	IS	Dec 16

Key

- Destination

Travel time (mins)

- 0 - 15
- 15 - 30
- 30 - 45
- 45 - 60

Client

South Coast Alliance for Transport and the Environment (SCATE)

Project

Sussex Coast Alternative Transport Vision

Figure title

60 minute public transport accessibility to Eastbourne (0700-0900)

Figure number	Date
Figure 1-7	Dec 2016

Appendix 4

List of broad interventions suggested at the stakeholders' workshop

A New Transport Vision for the Sussex Coast - New Transport Strategy Report

Theme	Timescale	Description	Group Number	Location
Active Travel	Short-Term	More and better cycle lanes and paths	1	General
Active Travel	Short-Term	Use bridleways for utility as well as recreation - extensive network underused for access	2	General
Active Travel	Short-Term	Comprehensive walking and cycling networks planned in all towns, cities with links	4	General
Active Travel	Short-Term	NCN2 gaps: Shoreham Worthing seafront	2	Worthing
Active Travel	Short-Term	High quality cycle route into Worthing town centre from North	2	Worthing
Active Travel	Short-Term	Better cycle facilities at destination	1	Brighton
Active Travel	Short-Term	Cycle bridge between West Worthing and Durrington as part of Worthing cycle network	2	Worthing

Theme	Timescale	Description	Group Number	Location
Active Travel/Behaviour	Short-Term	Improve conditions for walking and cycling i.e. more give and take by all road users	4	General
Active Travel/Funding	Short-Term	End piecemeal funding and invest in walking and cycling infrastructure in consistent manner	4	General
Active Travel/Policy	Short-Term	Adopt cycling strategy described by Cycling UK 'Space for Cycling'	4	General
Active Travel/Rail	Short-Term	Cycle route west Durrington (Worthing) development to Goring station	2	Worthing
Active Travel/Road	Short-Term	Separated walking/cycle path Arundel to Ford Station along Ford Rd	2	Arundel
Active Travel/Road	Short-Term	High quality cycle route into Worthing from west - A259/A2032 corridor	2	Worthing

Theme	Timescale	Description	Group Number	Location
Active Travel/Road	Short-Term	Cycle/walking bridge to provide southern access to new Monks Farm development	2	Worthing
Active Travel/Road	Short-Term	provide a footbridge or underpass to the Sompting bypass to enable foot/cycle access to the national park	3	Sompting
Active Travel/Road	Short-Term	Safe cycle access across Arundel Ford Rd Torton Hill to High Street (no route at the moment)	2	Arundel
Active Travel/Social	Short-Term	Identify and provide walking/cycling networks in all urban areas with audits carried out by young and old		General
Behaviour	Short-Term	Business travel planning support	2	General

Theme	Timescale	Description	Group Number	Location
Behaviour	Short-Term	Traffic management measures: decriminalised parking enforcement and workplace parking levy	1	General
Behaviour/Car/PT/Funding	Short-Term	Reduce cost of public transport and increase cost of private car travel	3	General
Behaviour/PT	Short-Term	Promotion of public transport	4	Chichester
Bus	Short-Term	Rural hinterlands of coastal towns to be connected by at least 4x daily bus services		General
Bus/Funding	Short-Term	Pick 6 (for example) schools whose traffic exacerbate A27 or other congestion points peak traffic and fund free school buses for them	3	Sompting
Bus/Funding/Policy/Rail/Bus	Short-Term	Instead of spending 160 million pounds on a scheme to increase E-W flow, use the money to subsidise public transport	4	General

Theme	Timescale	Description	Group Number	Location
Bus/Parking	Short-Term	Park and Ride at old quarry outside of Lewes	2	Lewes
Bus/Parking/Behaviour	Short-Term	Higher cost parking, as in Brighton and good buses	1	Chichester
Bus/Technology	Short-Term	Real time bus information	1	General
Car/Parking	Short-Term	Park and Ride at Chichester all year	1	Chichester
Car/Technology	Short-Term	Alternate days for going to city by car as in Paris	1	Chichester
Environment/Funding/Road	Short-Term	HE funds for access across A27/air pollution/biodiversity	4	Chichester
Funding	Short-Term	HE designated funds to address access to National Park from Brighton and Shoreham area		Brighton

Theme	Timescale	Description	Group Number	Location
HGV/Active Travel	Short-Term	Restrict HGVs in Brighton and urban areas to prevent mixing with people walking and cycling – e.g. adopt Sadiq Khan's London measures on HGVs	4	Brighton
Policy	Short-Term	Change criteria for selecting schemes through LEPs	3	General
Policy	Short-Term	Education for councillors	3	General
Policy/Social	Short-Term	Step change in urban design with focus on creating stronger sense of place and relegating traffic dominance to improve mental/physical health and social interaction		General
PT	Short-Term	Bus link Polegate station to Hailsham high frequency for sustainable transport to expanding from off the rail network	4	Polegate/Eastbourne

Theme	Timescale	Description	Group Number	Location
PT-Other	Short-Term	People mover system (along coast)	1	General
Rail	Short-Term	Resolution railway issues	4	Chichester
Rail	Short-Term	Train connection times coast way- Arun valley	2	Arundel
Rail/Road	Short-Term	Road rail interchange at Glynde	2	Lewes
Rail/Road	Short-Term	Road rail interchange at Berwick station	2	Lewes
Research	Short-Term	Measure air and ground pollution alongside all major roads and points of traffic holdup	3	General
Research	Short-Term	C2C LEP to commission study of West Coastway rail to explore opportunities for growth - of economic and transport	1	General

Theme	Timescale	Description	Group Number	Location
Road	Short-Term	Stop any new road development other than junction improvements until this process is followed by local councils and LEPs	3	General
Road	Short-Term	Speed limits on A27 junctions	4	Chichester
Road	Short-Term	HGV restrictions on Ford Rd Arundel	2	Arundel
Road	Short-Term	At the Arundel A27, reduce speed limits either side to ease flow immediately	3	Arundel
Road	Short-Term	Slow the Sompting bypass to 40mph to smooth the flow consistent with 40mph on either side, and assist access on/off/across A27	3	Sompting
Road	Short-Term	Improve A26 out of Newhaven EZ	2	Lewes

Theme	Timescale	Description	Group Number	Location
Road	Short-Term	Selmeston A27 re-alignment as proposed by Highways England (public consultation 2016)	4	Lewes
Road	Short-Term	Online improvements to A27 at Polegate (Lewes Rd to Cophall roundabout as proposed by Highways England public consultation 2016)	4	Polegate/Eastbourne
Active Travel	Medium-Term	Better use of bridleways for utility, not just recreation	2	General
Active Travel/Behaviour/Technology	Medium-Term	Provide (at subsidised cost) enhanced electric bikes to encourage 16/17 year olds to help avoid car ownership but still get to college/jobs	3	General
Active Travel/Bus/Car/Parking/Rail	Medium-Term	Simultaneously reduce town centre parking, building on car parks to solve housing shortage/provide services and introduce high quality public transport and walk/cycle routes	3	General

Theme	Timescale	Description	Group Number	Location
Active Travel/Bus/Funding/Rail	Medium-Term	Major investment in rail/bus/cycling - more than spent on roads	3	General
Active Travel/Funding	Medium-Term	Switch funding of new roads to investment in walking and cycling i.e. 20 pounds per person/year	4	General
Active Travel/Policy	Medium-Term	Extend bike share (similar to London bike hire scheme) to all towns and cities	4	General
Behaviour	Medium-Term	Reduce the need to travel		General
Behaviour	Medium-Term	Change people's travel habits - EDUCATION	1	General
Bus	Medium-Term	Quality bus partnerships	2	General

Theme	Timescale	Description	Group Number	Location
Bus/Policy/Rail	Medium-Term	Eastbourne/Hastings to combine efforts to develop sustainably with improved bus/rail services	3	Polegate/Eastbourne
Bus/Road	Medium-Term	Bus priority between Chichester Bognor Regis and Shoreham	2	Chichester
Bus/Technology	Medium-Term	Demand responsive transport service (rural areas)	2	General
Car/Parking	Medium-Term	Put in underground Park and Ride		Chichester
Funding/Policy	Medium-Term	Change the planning/funding environment: put the national park in charge of the LEP	3	General
Parking/PT	Medium-Term	Reduce car parking in city centre whilst improving capacity of PT	3	Brighton

Theme	Timescale	Description	Group Number	Location
Policy	Medium-Term	Stimulate an inter county yearlong debate on what we want for Sussex in the next 20 years	3	General
Policy	Medium-Term	Change the planning environment: employ creative big-picture planning officers not just more enforcers	3	General
PT	Medium-Term	Increase capacity for PT across the network	3	General
PT	Medium-Term	Affordable, reliable 24/7 public transport for the TTWAs - high capacity	3	General
PT-Other	Medium-Term	High quality sustainable transport links for Hailsham/Eastbourne area including high frequency public transport links	3	Polegate/Eastbourne
PT/Road	Medium-Term	Bus/rail integration; traffic lights on A27; online improvements of junctions	4	Chichester

Theme	Timescale	Description	Group Number	Location
Rail	Medium-Term	More rail capacity i.e. passing lanes at places for long distance trains		General
Rail	Medium-Term	Re-introduce rail link Uckfield-Lewes (10 miles long)	2	Lewes
Rail	Medium-Term	Willingdon chord line to enable speed up of Hastings and Bexhill - Lewes - Brighton journeys by rail	4	Polegate/Eastbourne
Rail	Medium-Term	Ashford-Hastings electrification (3rd rail) in 2020-2025 for through south coast rail services and Javelin extension to Rye and Hastings	4	Polegate/Eastbourne
Road	Medium-Term	Junction improvements on A27 Chichester, Worthing and Lancing, Arundel	2	General

Theme	Timescale	Description	Group Number	Location
Road	Medium-Term	Local road interventions to improve flow - could include removing rail barriers etc.	3	General
Road	Medium-Term	Intelligent traffic management for Sussex - raise funds for a project for it based	3	General
Road	Medium-Term	Traffic speed reduction in all towns to 20mph i.e. default speed limit	4	General
Road	Medium-Term	Reduce junctions on A27		Chichester
Road	Medium-Term	WS2 Arundel (new purple route) bypass	2	Arundel
Road	Medium-Term	At the Arundel A27, decide for and build the 'new purple' wide single carriageway option (see www.arundela27forum.org.uk)	3	Arundel

Theme	Timescale	Description	Group Number	Location
Road/PT-Other	Medium-Term	At Worthing, complement junction improvements with major investment in new public transport opportunities including north of the A27	3	Worthing
Active Travel/Bus/Road	Long-Term	Segregation bus and cycle lanes	4	Chichester
Active Travel/Environment	Long-Term	Walking and cycling plans and environmental plans	4	Chichester
Active Travel/Road/Social	Long-Term	Much better bridges/underpasses/crossings at grade for vulnerable road users on all main roads and trunk roads	4	General
Behaviour/Car	Long-Term	Car share clubs	3	General
Behaviour/Car/PT	Long-Term	Positive incentives to use PT and disincentives to travel by car	3	General

Theme	Timescale	Description	Group Number	Location
Behaviour/Policy	Long-Term	Work locations - supporting locally housed employees!	3	General
Bus/Car/Parking	Long-Term	Park and Ride and remove city centre car parks	4	Chichester
Car/Technology	Long-Term	Electric vehicles	3	General
Policy	Long-Term	Focus development allocations around public transport	4	General
Policy	Long-Term	Education of politicians	1	General
PT-Other	Long-Term	Re-introduce coastal ferries but with high-speed technology	2	General
PT-Other	Long-Term	Demand responsive options	3	General

Theme	Timescale	Description	Group Number	Location
PT-Other	Long-Term	Frequent PT options	3	General
PT-Other	Long-Term	Light rail centred on Brighton E-W, N-S		Brighton
Rail	Long-Term	BIG CHOICE all trains calling at all stations OR small stations closed --> faster trains, higher line speed, improved mode connectivity	2	General
Rail	Long-Term	Remove station calls at Aldrington, Fishersgate	2	General
Rail	Long-Term	Investment in rail improvements - passing points	1	General
Rail	Long-Term	Ashford-Southampton fast East West rail services using sections of 4 track to overtake stopping trains on Coast way West	4	General
Rail	Long-Term	Passing loops at Worthing to allow trains to pass	2	Worthing

Theme	Timescale	Description	Group Number	Location
Road	Long-Term	Have joined up transport policy for all roads in area including HE	1	General
Social	Long-Term	Develop local agreement and commitment (beyond current LA action) to economic objectives and then consider how to prioritise social, educational, housing and transport responses	3	General